ATTACHMENT IPT18
ADDITIONAL INFORMATION FROM ATMOSPHERIC ANALYSIS & CONSULTING, INC (TRS RSK-175)

ADDENDUM TO THE LABORATORY REPORTS

Atmospheric Analysis & Consulting, Inc.

Addendum to AAC Project 211211 (New Indy Container Board) for Keika Ventures

Prepared by AAC

08/12/2021

Sucha Parmar, Ph.D.
Technical Director

Dilution and "learning" Notes

"Learning" how to run the samples involved discovering which samples were dirtiest and what dilutions were needed. The analyst who conducted the analysis was experienced with the method prior to this project. Some samples were over-diluted (21220 was diluted by 10000) and therefore concentrations from that sample had to be estimated for some compounds from the non-diluted injection when a smaller dilution would have been preferable. As the analysis continued this became less of a problem, as the approximate dilution needed could be estimated before hand and checked against similar samples. Except for any relevant qualifications noted later in this Addendum, compound concentrations determined from the non-diluted injection for each sample ("x1" in the raw data), should generally be considered more reliable.

Calibration Notes

Calibration curves were provided by AAC with the full data package. For both instruments the curves are forced through zero and the Method Detection Limit (MDL) is set as ~1.1 ppbV while the bottom of the curve for both instruments was ~10 ppbV. For SCD #10 the top of the curve is ~ 5/2.5/2.5 ppm H2S/MeSH/DMS and on GC-BTU the top of the curve is at ~10.5 ppm for all compounds. Given the higher limit for GC-BTU, most of the very dirtiest samples were analyzed on that instrument to minimize the required dilutions. The limits on both instruments are the result of lab testing and we know that linearity is not maintained when the peaks become substantially larger than those within the curve.
Results are considered estimated if the compound has an area count significantly above or below the maximum or minimum area counts corresponding to the upper or lower limits of the curve (~10% above). For example, H2S in sample 21207 has an area count of 65133 units. The top of the H2S curve for that instrument, corresponding to ~5.2 ppm, is 34919 units. Therefore in the report, H2S for this sample is marked with a "**" to indicate that the H2S concentration should be considered estimated.
The marking of "NA" appears exclusively with those samples for which only one vial was provided. These concentrations could not be reliably estimated, as the peaks themselves were "peaked out;" the instrument was unable to capture/measure all of the compound before it eluted from the column. For all compounds which were designated "NA," a dilution of the proceeding sample was made to measure their concentration.

It would appear that DMDS for 21250, MeSH for 21264, and MeSH for 21274 are in fact inside the calibration range but are incorrectly marked as being outside of it. The remainder of the listed samples appear to have concentrations well above those of the calibration curve. The only exception is 21230, the dilution for which has an area count between the MDL and the bottom point of the curve. Due to the way the MDL is determined, and since it is not a part of the calibration curve, any amount within the MDL to curve range should be considered estimated.

Method Limitations and Biases

Method limitations include (A) the making of dilutions from small sample volumes, (B) sample carry-over, (C) initial sample condition, and (D), inherent method uncertainty.

(A) Many samples required dilutions which were very large (in the thousands) but the amount of actual sample pulled from each vial was 10 mL, per the method. Diluting such a small amount introduces substantial uncertainty. This is the primary cause of concern in terms of data accuracy, reliability, and reproducibility.

(B) Compounds that are present in high concentrations can sometimes "carry-over" from one run to the next, giving a higher concentration for the next sample than it really has. This is primarily a concern with heavier sulfur compounds, and generally does not affect most of the analytes of interest (H2S, MeSH, DMS, CDS) even at high concentrations. In particular, the instrument that was assigned the large majority of dirty samples is very stable in regards to its response and generally does not have issues with sample carry-over.

(C) Other possible factors include initial sample condition, including the acidity of the samples. As discussed in our previous emails, we acidified the samples to ensure the sulfur compounds came out. While the amount of acid added was constant, and testing of the waste showed an acidic solution, it may be that different samples with different types of compounds at different concentrations cause the acidity of each type of sample to be different. Dissolved sulfurs are sensitive the water pH, which in turn will affect the partition coefficient. Also, different vials are different samples and there can be unknown differences is sampling and storage. Upon review for this addendum, several of the samples mentioned below were checked visually for any differences in wastewater appearance. Some were in brown vials, and thus could not checked with confidence. Others showed no difference between sampling times, while two sets showed noticeable variation in appearance. These are noted in "Anomalies for Particular Samples." However, even with differences in appearance, no pattern emerged.

(D) Finally, despite the fact that the samples were acidified, this method is not validated for analysis of sulfur dissolved in water and regularly has consistency issues due the reactive and volatile nature of sulfur compounds. RSK-175 is far more consistent and accurate for hydrocarbon and Fixed Gases analysis, as they are less reliant on the pH of the water sample.

Anomalies for Particular Samples

211211-21211: this is a data entry error. The measured DMS result was input into the CDS cell. The correct results are 5433 ug/L DMS and <0.058 ug/L CDS. This improves the agreement between similar samples. These vials were not checked visually. An unofficial report page is attached.

211211-21202/03: There is a small typo for the data entry for DMS, but it does not substantially change the alignment of results. The fact that both the non-diluted run (21202) and the diluted run (21203) show lower concentrations across all compounds is an indication that this pair was cleaner than the other ASB Zone 1 Center pairs. In other words, both H2S and all other compounds were measured as lower concentration than the comparison samples indicating these two vials were in fact less concentrated.

211211-21251 (21250): On the client provided excel sheet, it appears the sample in question is 21250, not 21251. Dimethyl sulfide was input too high, the actual concentration is 336 ug/L, not 335917 ug/L. An unofficial report page is attached. Otherwise no issues are identified. There was some difference in appearance between the sample and the QA sample for the first sample in this set, 21233, but not for 20250.

211211-21263: Considering the size of the dilution required (x3000), these numbers are well within a range acceptable for this method. The three samples in this set appeared very similar visually.

211211-21264: All compounds except for H2S are measured using the x1 injection, so the possible error is reduced. Additionally, the dilution matches the higher results for this sample than the ones it is being compared too. This sample is unlikely to be swapped with 21267 on the lab's end, as the dilution trends match the non-diluted. It is possible the vials were labeled incorrectly. The three samples in this set appeared very similar visually.

211211-21266: Using the H2S value from the x5 dilution would provide a better match to the partner samples, but would provide a worse match for MeSH. Therefore, given the uncertainties with dilutions, the non-diluted injection values were used for both compounds. This is a good example of where having a third vial could have potentially solved this issue. The vial taken at 1645 was slightly darker than the other two in this set.

211211-21267: Similar to 21264, all compounds except for DMS and DMDS are measured using the x1 injection, so the possible error is reduced. Additionally, the dilution matches the higher results for this sample than the ones it is being compared too. This sample is unlikely to be swapped with 21264 on the lab's end, as the dilution trends match the non-diluted. It is possible the vials were labeled incorrectly. The vials for the three sets of which this sample is a part were noticeably distinct visually, with the sample taken at 1612 being the dirtiest, followed by 1225, and finally 0835 the cleanest.

Client ID	AAC ID	Date / time	Dil Factor
1-A ASB Inf	21194	07/09/21, 0800	x1
1-A ASB Inf	21195	07/09/21, 0800	x1
1-B ASB EFF	21196	07/09/21, 0800	x1
1-B ASB EFF	21197	07/09/21, 0800	x1
2-A Foul Cond. Inlet	21198	07/09/21, 0800	x1
2-A Foul Cond. Inlet	21199	07/09/21, 0800	x1000
2-B Foul Cond. Oulet	21200	07/09/21, 0805	x1
2-B Foul Cond. Oulet	21201	07/09/21, 0805	x10000
5-A ASB Zone 1	21202	07/09/21, 0845	x1
5-A ASB Zone 1	21203	07/09/21, 0845	x1000
5-B ASB Zone 2	21204	07/09/21, 0925	x1
5-B ASB Zone 2	21205	07/09/21, 0925	x1
5-C ASB Zone 3	21206	07/09/21, 0953	x1
5-C ASB Zone 3	21207	07/09/21, 0953	x1
4A-Post-Area In	21208	07/09/21, 1111	x1
4A-Post-Area Surface	21209	07/09/21, 1125	x1, x50
4A-Post-Area Out	21210	07/09/21, 1123	x1, x50
2A-Foul Cond. Inlet	21211	07/09/21, 1310	x1, x5000
2B-Foul Cond. Outlet	21212	07/09/21, 1315	x1, x5000
1A-ASB Inf	21213	07/09/21, 1340	x1, x25
1B-ASB Eff	21214	07/09/21, 1345	x1
5A-ASB Zone	21215	07/09/21, 1248	x1, x5000
5A-ASB Zone 2	21216	07/09/21, 1326	x1, x5000
5A-ASB Zone 3	21217	07/09/21, 1344	x1, x10
2A-Foul Cond. Inlet	21218	07/09/21, 1700	x1, x5000
2A-Foul Cond. Outlet	21219	07/09/21, 1705	x1, x5000
1A-ASB Inf	21220	07/09/21, 1740	x1, x10000
1A-ASB Eff	21221	07/09/21, 1745	x1
5A-ASB Zone 1	21222	07/09/21, 1636	x1, x3000
5B-ASB Zone 2	21223	07/09/21, 1703	x1, x3000
5C-ASB Zone 3	21224	07/09/21, 1719	x1, x100
2A-Foul Cond Inlet	21225	07/09/21, 1700	x1
2B-Foul Cond. Outlet	21226	07/09/21, 1705	x1, x3000
1A-ASB Inf	21227	07/09/21, 1740	x1
1B-ASB- Eff	21228	07/09/21, 1745	x1

Client ID	AAC ID	Date / time	Dil Factor
2A-Foul Cond. Inlet	21229	7/10/2021, 0820	x1, x3000
2B-Foul Cond. Outlet	21230	7/10/2021, 0825	x1, x2500
1A-ASB Inf.	21231	7/10/2021, 0850	x1
1B-ASB Eff	21232	7/10/2021, 0855	x1
5A-ASB Zone 1	21233	7/10/2021, 0939	x1, x3000
5A-ASB Zone 1 QA	21233 QA	7/10/2021, 0939	x1, x2500
5B-ASB Zone 2	21234	7/10/2021, 0831	x1, x1000
5B-ASB Zone 2	21234 QA	7/10/2021, 0831	x1, x2000
5C-ASB Zone 3	21235	7/10/2021, 0814	x1
5C-ASB Zone 3	21235 QA	7/10/2021, 0814	x1
4A-Post Area. Inlet	21236	7/10/2021, 1011	x1
4A-Post Area. Inlet	21236 QA	7/10/2021, 1011	x1
4B-Post Area. Surface	21237	7/10/2021, 1021	x1
4B-Post Area. Surface	21237 QA	7/10/2021, 1021	x1
4C-Post Area. Outlet	21238	7/10/2021, 1023	x1
4C-Post Area. Outlet	21238 QA	7/10/2021, 1023	x1
2B-Foul Cond. Inlet	21239	7/10/2021, 1215	x1, x3000
2B-Foul Cond. Outlet	21240	7/10/2021, 1220	x1, x200
1A-ASB Inf.	21241	7/10/2021, 1304	x1
1B-ASB Eff.	21242	7/10/2021, 1309	x1
5A-ASB Zone 1	21243	7/10/2021, 1307	x1, x500
5B-ASB Zone 2	21244	7/10/2021, 1233	x1, x200
5C-ASB Zone 3	21245	7/10/2021, 1214	x1
2A-Foul Cond. Inlet	21246	7/10/2021, 1605	x1, x3000
2B-Foul Cond. Outlet	21247	7/10/2021, 1610	x1, x100
1A-ASB- Inf.	21248	7/10/2021, 1640	x1
1B-ASB Eff.	21249	7/10/2021, 1645	x1
5A-ASB Zone 1	21250	7/10/2021, 1700	x1, x3000
5B-ASB Zone 2	21251	7/10/2021, 1632	x1, x200
5C-ASB Zone 3	21252	7/10/2021, 1615	x1

Client ID	AAC ID	Date / time	Dil Factor
2A-Foul Cond. Inlet	21253	07/11/21, 0815	x1, x3000
2B-Foul Cond. Outlet	21254	07/11/21, 0820	x1, x1000
1A-ASB Inf.	21255	07/11/21, 0850	x1
1B- ASB Eff.	21256	07/11/21, 0855	x1
5A-ASB Zone 1	21257	07/11/21, 0835	x1, x3000
5A-ASB Zone 2	21258	07/11/21, 0904	x1, x100
5C-ASB Zone 3	21259	07/11/21, 0925	x1
4A-Post Area. In	21260	07/11/21, 1010	x1
4B-Post Area. Surface	21261	07/11/21, 1017	x1
4C-Post Area. Out	21262	07/11/21, 1015	x1
2A-Foul Cond. Inlet	21263	07/11/21, 1220	x1, x3000
2B-Foul Cond. Outlet	21264	07/11/21, 1225	x1, x3000
1A-ASB Inf.	21265	07/11/21, 1255	x1, x5
1B-ASB Eff.	21266	07/11/21, 1300	x1, x5
5A-ASB Zone 1	21267	07/11/21, 1225	x1, x25
5B-ASB Zone 2	21268	07/11/21, 1249	x1, x100
5C-ASB Zone 3	21269	07/11/21, 1309	x1
2A-Foul Cond. Inlet	21270	07/11/21, 1610	x1, x3000
2B-Foul Cond. Outlet	21271	07/11/21, 1615	x1, x200
1A-ASB Inf.	21272	07/11/21, 1640	x1
1B-ASB Eff.	21273	07/11/21, 1645	x1
5A-ASB Zone 1	21274	07/11/21, 1612	x1, x3000
5B-ASB Zone 2	21275	07/11/21, 1644	x1
5C-ASB Zone 3	21276	07/11/21, 1702	x1

LABORATORY ANALYSIS REPORT

CLIENT	: Keika Ventures, LLC	SAMPLING DATE	: 07/09/2021
PROJECT NO.	: 211211A	RECEIVING DATE	: 07/13/2021
MATRIX	: AIR	ANALYSIS DATE	: 07/13-14/2021
UNITS	: ug/L	REPORT DATE	: 07/21/2021

Dissolved Sulfur Analysis by EPA RSK-175

Client ID	5-C ASB Zone 3 (0953)	5-C ASB Zone 3 (0953)	4A-Post-Area In (1111)	4A-Post-Area Surface (1125)	4A-Post-Area Out (1123)	2A-Foul Cond. Inlet (1310)
AAC ID	211211-21206	211211-21207	211211-21208	211211-21209	211211-21210	211211-21211
Analyte	Result	Result	Result	Result	Result	Result
Hydrogen Sulfide	10.6	37.4**	2.46	62.9	212	55806
COS / SO2*	< 0.043	0.055	0.049	< 0.043	< 0.043	< 0.043
Methyl Mercaptan	0.134	0.399	1.28	9.03	3.84	2720
Ethyl Mercaptan	< 0.188	< 0.188	< 0.188	< 0.187	< 0.187	10.891
Dimethyl Sulfide	< 0.339	< 0.339	2.83	21.4	9.40	5433
Carbon Disulfide	< 0.058	0.095	0.647	0.757	0.886	< 0.058
Isopropyl Mercaptan*	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043
tert-Butyl Mercaptan*	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043
n-Propyl Mercaptan	< 0.222	< 0.222	< 0.222	< 0.222	< 0.222	< 0.222
Methylethylsulfide*	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043
sec-Butyl Mercaptan / Thiophene*	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	3.09
iso-Butyl Mercaptan*	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043
Diethyl Sulfide	< 0.570	< 0.570	< 0.570	< 0.570	< 0.570	< 0.570
n-Butyl Mercaptan	< 0.123	< 0.123	< 0.123	< 0.123	< 0.123	< 0.123
Dimethyl Disulfide	< 1.006	< 1.006	7.41	59.3	21.1	7907
2-Methylthiophene	< 0.469	< 0.469	< 0.469	< 0.469	< 0.469	< 0.469
3-Methylthiophene*	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043
Tetrahydrothiophene*	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043
Bromothiophene*	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043
Thiophenol	< 3.754	< 3.754	< 3.754	< 3.754	< 3.754	< 3.754
Diethyl Disulfide	< 0.772	< 0.772	< 0.772	< 0.772	< 0.772	< 0.772
Total Unidentified Sulfur*	< 0.043	< 0.428	0.205	1.20	0.380	4269
Total Reduced Sulfurs*	10.7	37.6	4.30	73.3	217	62129

*Concentrations calculated using Henry's Law Constant and Molecular Weight for H2S

All samples were Method Blank corrected

TRS does not include COS and SO2

**Area counts are well above calibration range, results should be considered estimated

Compounds for which peaks are "peaked out" for a given run are labled "NA"

LABORATORY ANALYSIS REPORT

CLIENT : Keika Ventures, LLC
PROJECT NO. : 211211B
MATRIX : AIR
UNITS : ug/L

SAMPLING DATE : 07/10/2021
RECEIVING DATE : 07/13/2021
ANALYSIS DATE : 07/17-/19/2021
REPORT DATE : 07/21/2021

Dissolved Sulfur Analysis by EPA RSK-175

Client ID	2B-Foul Cond. Outlet	1A-ASB- Inf.	1B-ASB Eff.	5A-ASB Zone 1	5B-ASB Zone 2	5C-ASB Zone 3
AAC ID	211211-21247	211211-21248	211211-21249	211211-21250	211211-21251	211211-21252
Analyte	Result	Result	Result	Result	Result	Result
Hydrogen Sulfide	156	11.9	1.91	4888	208	2.14
COS / SO2*	< 0.043	0.662	0.788	< 0.043	< 0.043	< 0.043
Methyl Mercaptan	13.6	0.633	1.987	195**	43.4	0.237
Ethyl Mercaptan	< 0.188	< 0.188	< 0.185	< 0.188	< 0.188	< 0.188
Dimethyl Sulfide	894.8	53.2	1.98	336	37.4	0.370
Carbon Disulfide	< 0.058	2.24	1.20	0.331	0.578	< 0.058
Isopropyl Mercaptan*	< 0.043	< 0.043	< 0.042	< 0.043	< 0.043	< 0.043
tert-Butyl Mercaptan*	< 0.043	< 0.043	< 0.042	< 0.043	< 0.043	< 0.043
n-Propyl Mercaptan	< 0.222	< 0.222	< 0.219	< 0.222	< 0.222	< 0.222
Methylethylsulfide*	< 0.043	< 0.043	< 0.042	< 0.043	< 0.043	< 0.043
sec-Butyl Mercaptan / Thiophene*	0.226	< 0.043	< 0.042	< 0.043	< 0.043	< 0.043
iso-Butyl Mercaptan*	< 0.043	< 0.043	< 0.042	< 0.043	< 0.043	< 0.043
Diethyl Sulfide	< 0.570	< 0.570	< 0.566	< 0.570	< 0.570	< 0.570
n-Butyl Mercaptan	< 0.123	< 0.123	< 0.120	< 0.123	< 0.123	< 0.123
Dimethyl Disulfide	2418	28.1	1.11	364**	56.8	< 1.006
2-Methylthiophene	< 0.469	< 0.469	< 0.465	< 0.469	< 0.469	< 0.469
3-Methylthiophene*	< 0.043	< 0.043	< 0.042	< 0.043	< 0.043	< 0.043
Tetrahydrothiophene*	< 0.043	< 0.043	< 0.042	< 0.043	< 0.043	< 0.043
Bromothiophene*	< 0.043	< 0.043	< 0.042	< 0.043	< 0.043	< 0.043
Thiophenol	< 3.754	< 3.754	< 3.750	< 3.754	< 3.754	< 3.754
Diethyl Disulfide	< 0.772	< 0.772	< 0.768	< 0.772	< 0.772	< 0.772
Total Unidentified Sulfur*	18.390	1.82	0.144	5.95	0.416	< 0.043
Total Reduced Sulfurs*	396	23.5	3.99	5025	232	2.35

*Concentrations calculated using Henry's Law Constant and Molecular Weight for H2S

All samples were Method Blank corrected

TRS does not include COS and SO_2

**Area counts are well outisde calibration range, results should be considered estimated. Alternatively, area counts are very low at the reported dilution.

Compounds for which peaks are "peaked out" for a given run are labled "NA"

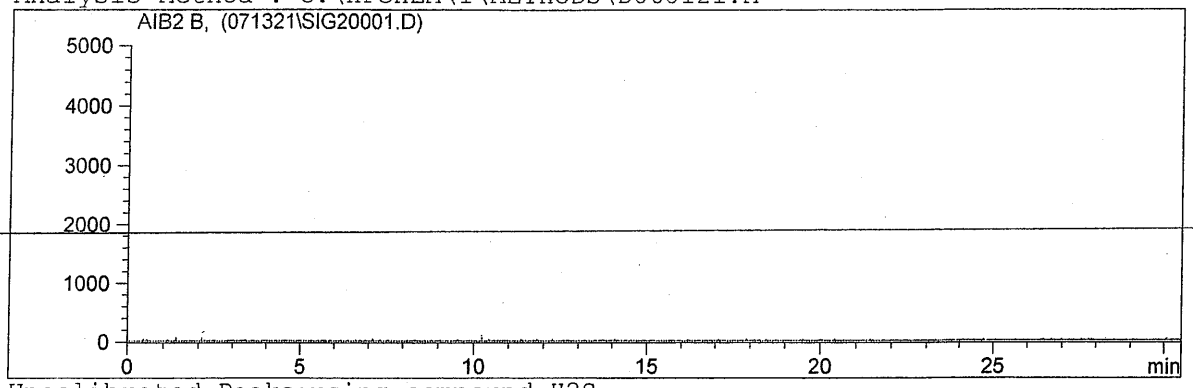
QA QC SUMMARY

QA/QC
Summary

Data file :C:\HPCHEM\1\DATA\071321\SIG20001.D

Customized Report: D5504

Injection Date : 7/13/2021 6:03:43 AM Seq. Line :1
Sample Name : System Blank
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

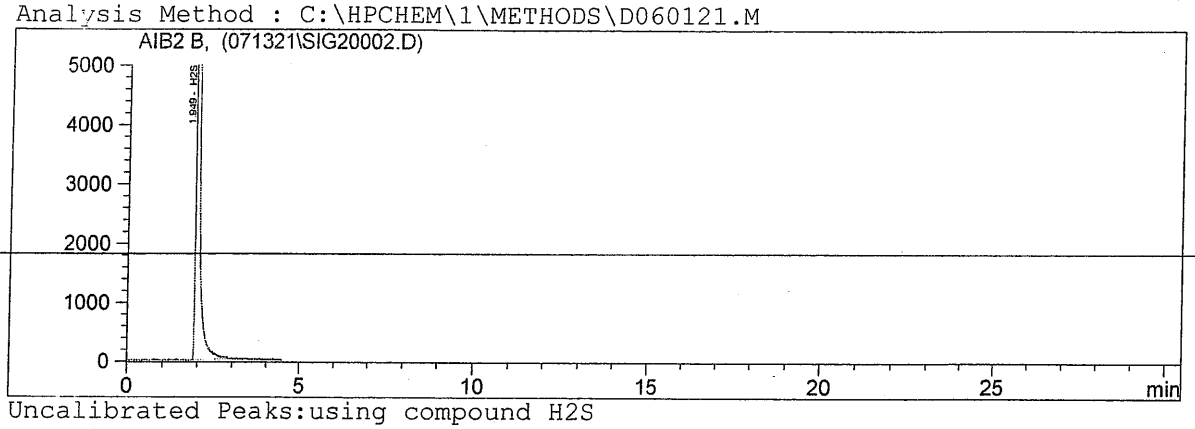
Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\071321\SIG20002.D

Customized Report: D5504

Injection Date : 7/13/2021 6:40:27 AM Seq. Line :2
Sample Name : H2S Primer 20 ppm SS1284x1
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

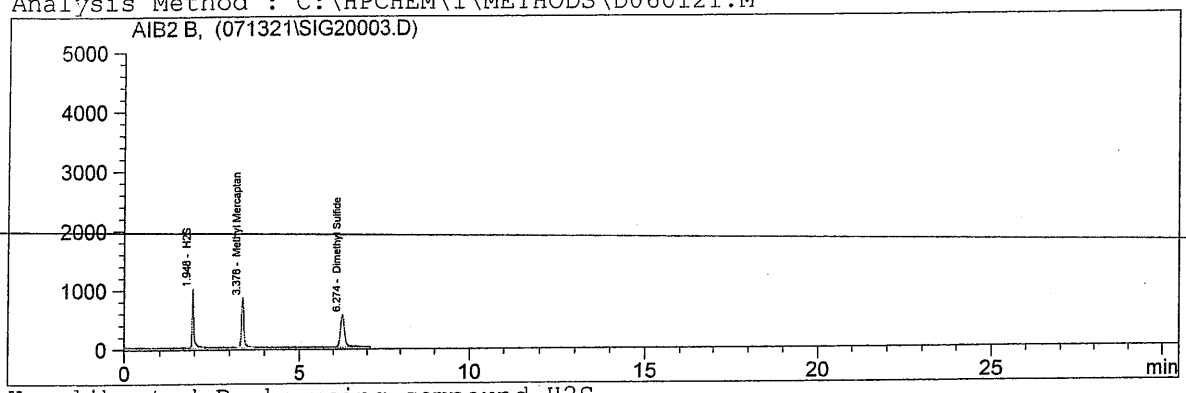
Ret Time [min]	Area	Amount [ppbV]	Name
1.949	180797	26702.861	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		26702.861	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\071321\SIG20003.D

Customized Report: D5504

Injection Date : 7/13/2021 6:46:34 AM Seq. Line :3
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.948	3508	518.179	H2S
0.000	0	0.000	COS / SO2
3.378	4243	506.015	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.274	4879	523.610	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1547.803	

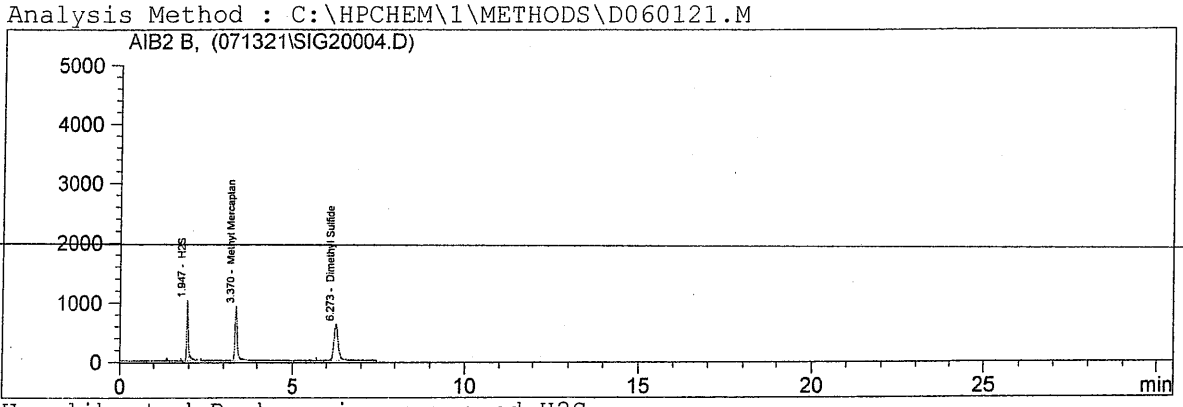
*** End of Report ***

7/13/21

Data file :C:\HPCHEM\1\DATA\071321\SIG20004.D

Customized Report: D5504

Injection Date : 7/13/2021 6:55:29 AM Seq. Line :4
Sample Name : CCV 500 ppbV dp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

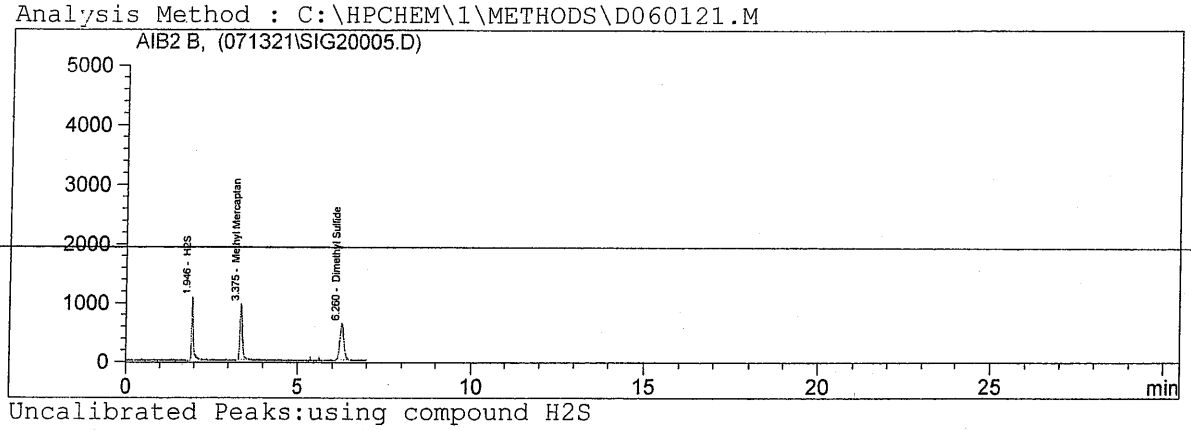
Ret Time [min]	Area	Amount [ppbV]	Name
1.947	3590	530.288	H2S
0.000	0	0.000	COS / SO2
3.370	4469	532.897	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.273	4927	528.781	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1591.967	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\071321\SIG20005.D

Customized Report: D5504

Injection Date : 7/13/2021 7:04:37 AM Seq. Line :5
Sample Name : CCV 500 ppbV tp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

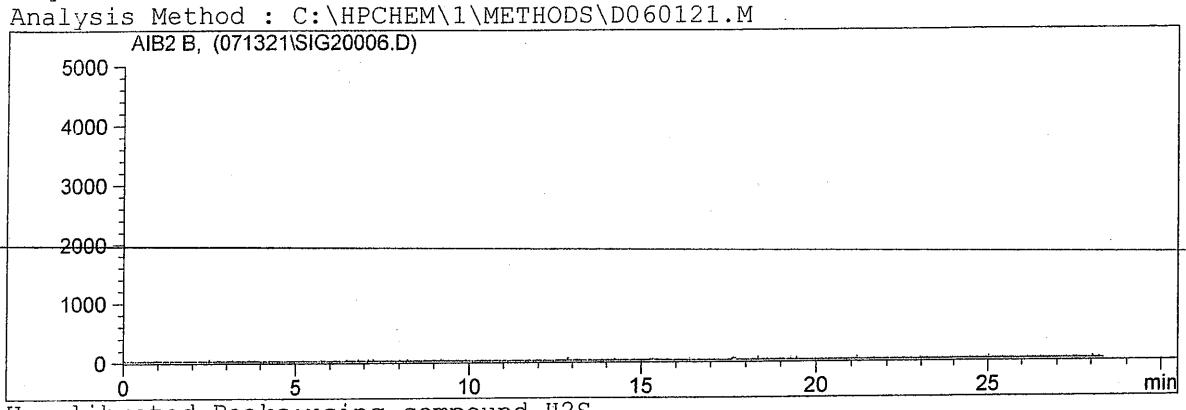
Ret Time [min]	Area	Amount [ppbV]	Name
1.946	3588	529.988	H2S
0.000	0	0.000	COS / SO2
3.375	4494	535.892	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.260	4842	519.654	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1585.534	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\071321\SIG20006.D

Customized Report: D5504

Injection Date : 7/13/2021 7:13:18 AM Seq. Line :6
Sample Name : Method Blank
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

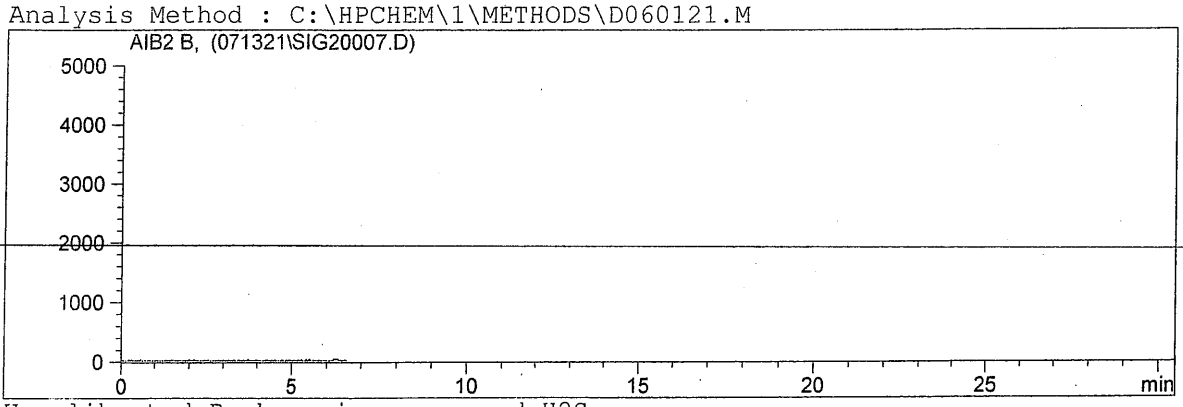
*** End of Report ***

7/13/21

Data file :C:\HPCHEM\1\DATA\071321\SIG20007.D

Customized Report: D5504

Injection Date : 7/13/2021 7:49:27 AM Seq. Line :7
Sample Name : 211084-20480 x5
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 5.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

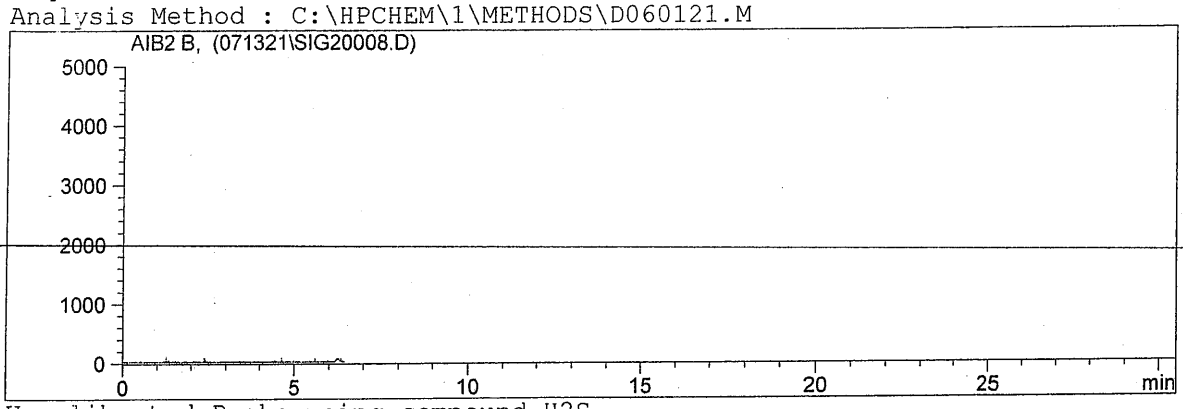
*** End of Report ***

7/13/21

Data file :C:\HPCHEM\1\DATA\071321\SIG20008.D

Customized Report: D5504

Injection Date : 7/13/2021 7:58:38 AM Seq. Line :8
Sample Name : 211084-20480 x5 dp
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

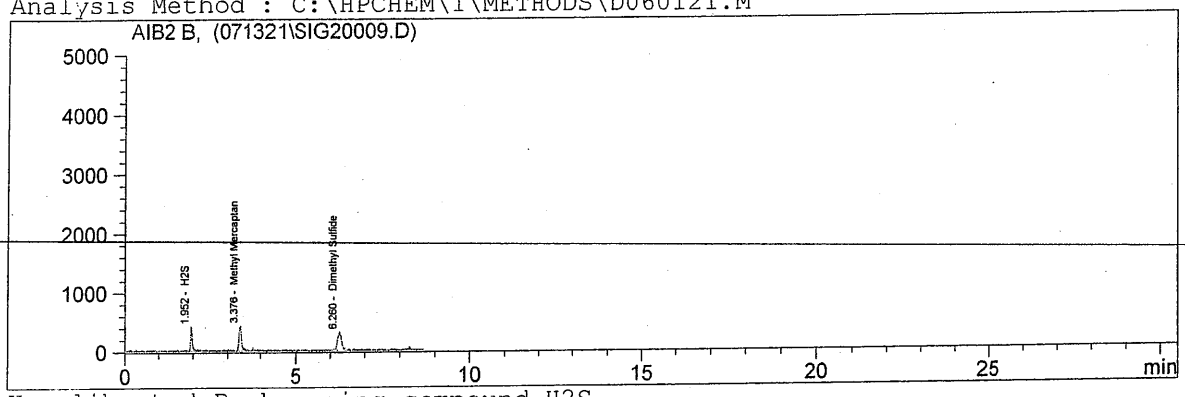
*** End of Report ***

7/13/21

Data file :C:\HPCHEM\1\DATA\071321\SIG20009.D

Customized Report: D5504

Injection Date : 7/13/2021 8:06:41 AM Seq. Line :9
Sample Name : 211084-20480 MS x10 H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.952	1621	239.459	H2S
0.000	0	0.000	COS / SO2
3.376	2300	274.238	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.260	2312	248.126	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		761.823	

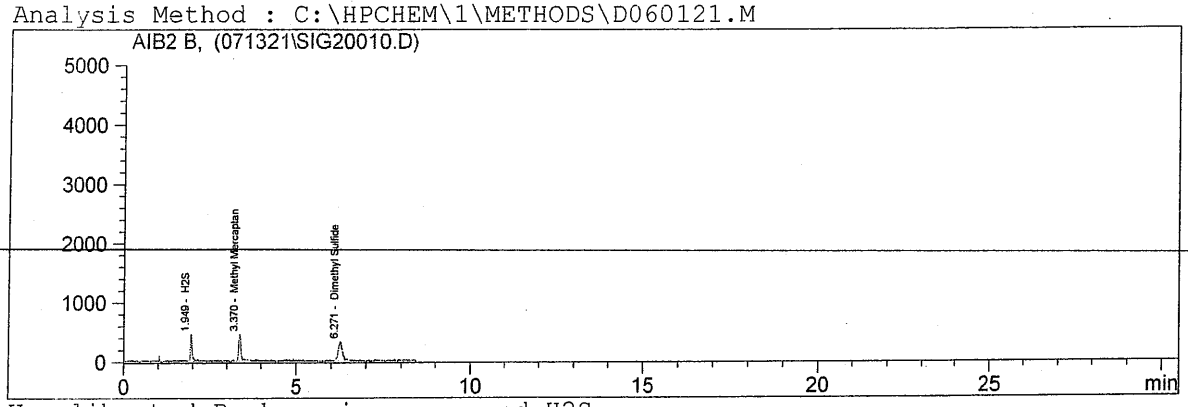
*** End of Report ***

7/13/21

Data file :C:\HPCHEM\1\DATA\071321\SIG20010.D

Customized Report: D5504

Injection Date : 7/13/2021 8:20:30 AM Seq. Line :10
Sample Name : 211084-20480 MSD x10 H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.949	1655	244.452	H2S
0.000	0	0.000	COS / SO2
3.370	2150	256.335	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.271	2482	266.386	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		767.174	

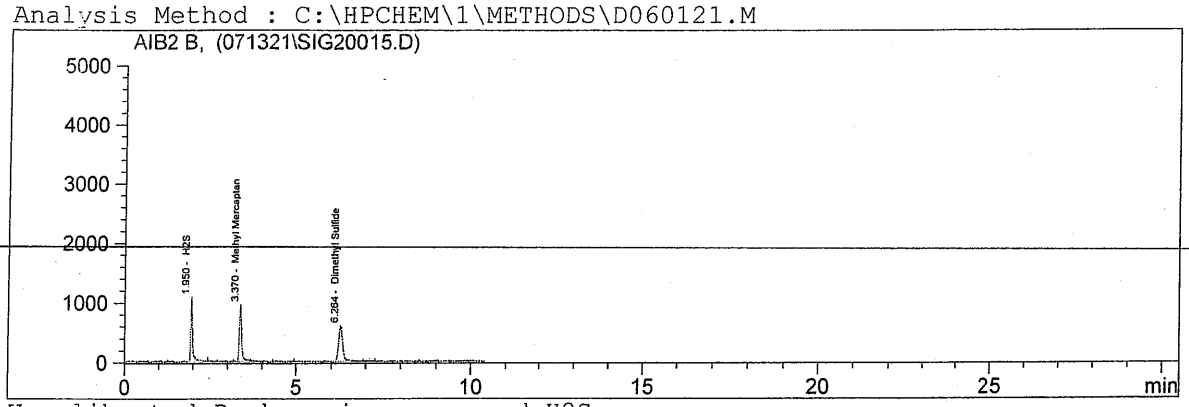
*** End of Report ***

7/13/21

Data file :C:\HPCHEM\1\DATA\071321\SIG20015.D

Customized Report: D5504

Injection Date : 7/13/2021 11:15:08 AM Seq. Line :15
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.950	3625	535.467	H2S
0.000	0	0.000	COS / SO2
3.370	4545	541.947	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.264	4886	524.367	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1601.781	

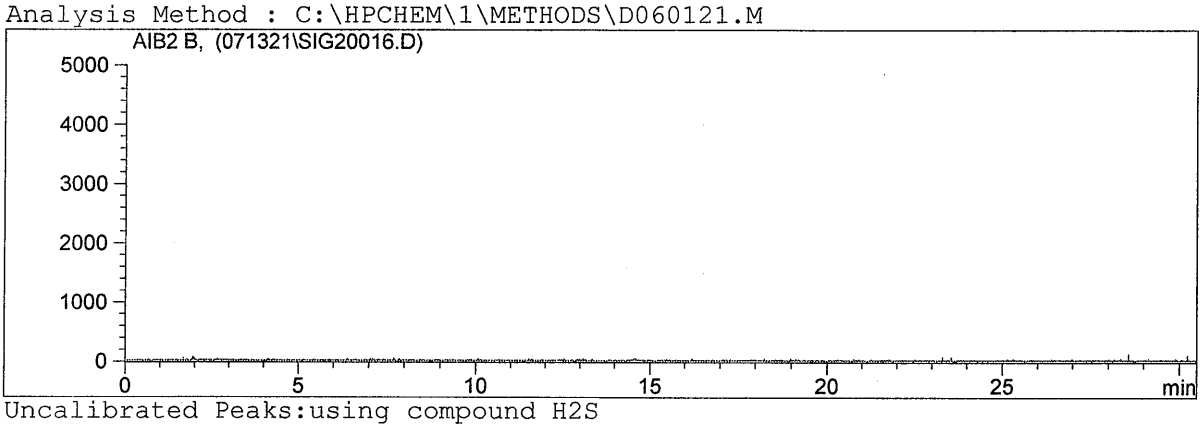
*** End of Report ***

7/13/21

Data file :C:\HPCHEM\1\DATA\071321\SIG20016.D

Customized Report: D5504

Injection Date : 7/13/2021 11:34:57 AM Seq. Line :16
Sample Name : RSK-175 H2O BK
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

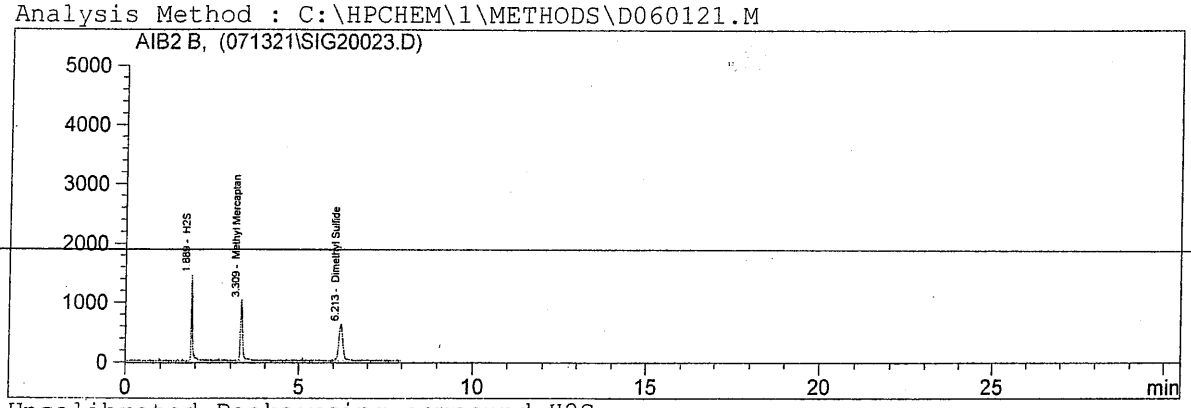
*** End of Report ***

7/13/21

Data file :C:\HPCHEM\1\DATA\071321\SIG20023.D

Customized Report: D5504

Injection Date : 7/13/2021 4:27:19 PM Seq. Line :23
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.889	3600	531.702	H2S
0.000	0	0.000	COS / SO2
3.309	4445	530.048	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.213	4881	523.836	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1585.586	

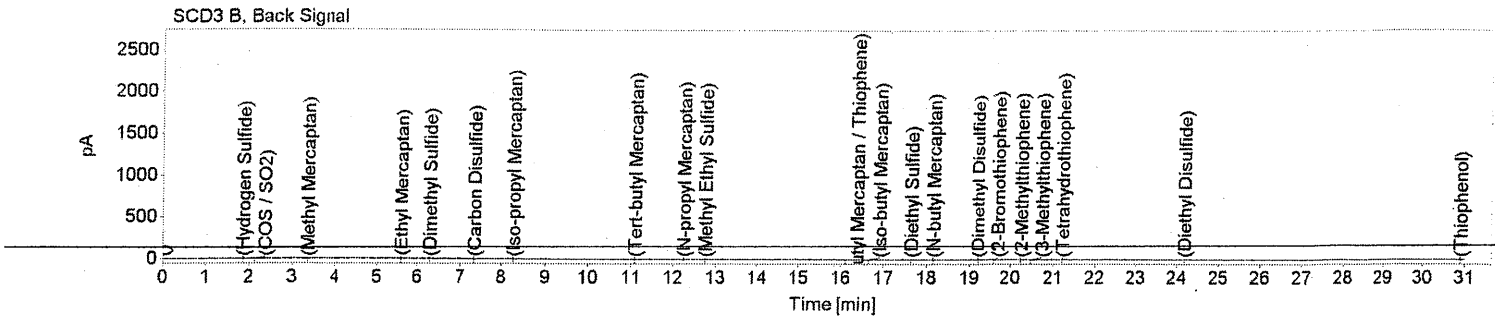
*** End of Report ***

7/13/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071321\001B0101.D
Injection date: 7/13/2021 6:09:49 AM
Sample name: System Blank
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

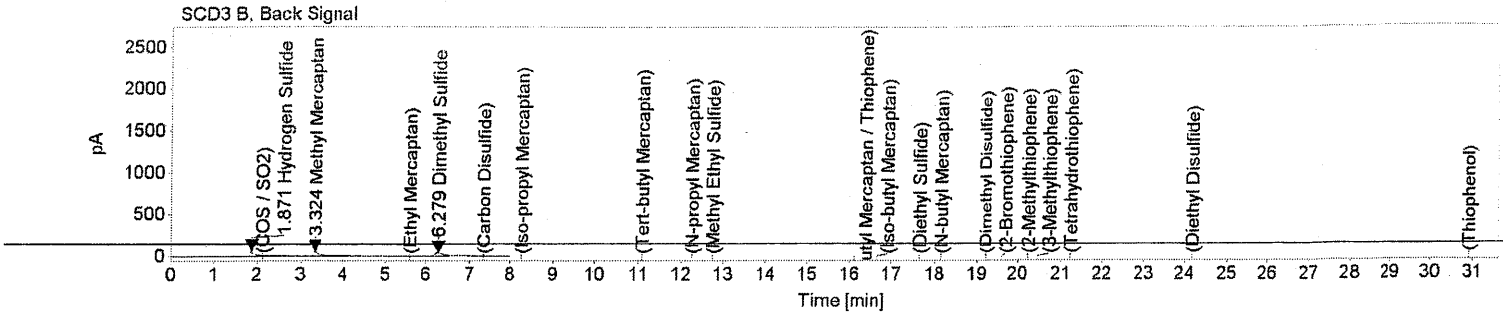
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

RL 7/13/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071321\002B0201.D
Injection date: 7/13/2021 6:56:58 AM
Sample name: 500 ppbV H2S/MeSH/DMS (SS1289x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

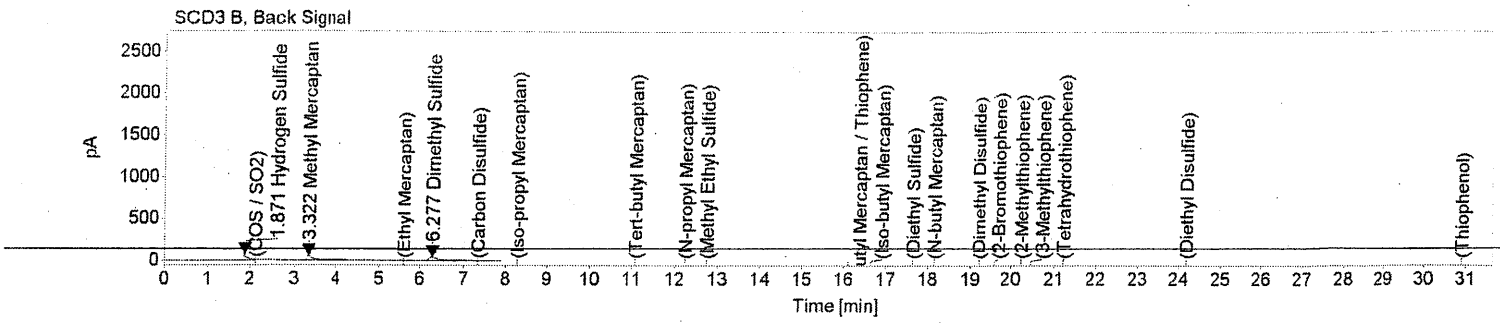
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.871	493.32	0.521	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.324	529.82	0.508	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.279	565.97	0.542	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.571	

7/13/21

TRS Analysis

Data file:	C:\CHEM32OL\1\DATA\071321\003B0301.D	**Instrument:**	GC-BTU
Injection date:	7/13/2021 7:07:20 AM	**Acq. operator:**	SYSTEM
Sample name:	500 ppbV H2S/MeSH/DMS (SS1289x40)dp	**Sample multiplier:**	1
Acq. method:	SCD_Only.M		
Analysis method:	TRS 070521.M		



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

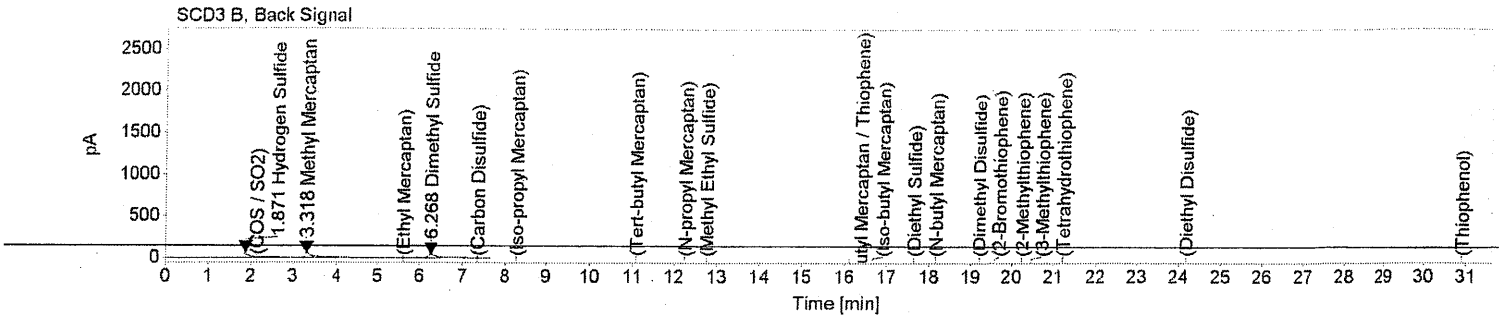
RT [min]	Area	Amount [ppm]	Name
1.871	484.19	0.511	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.322	549.83	0.528	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.277	559.13	0.535	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.574	

7/13/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071321\004B0401.D
Injection date: 7/13/2021 7:17:30 AM
Sample name: 500 ppbV H2S/MeSH/DMS (SS1289x40)tp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

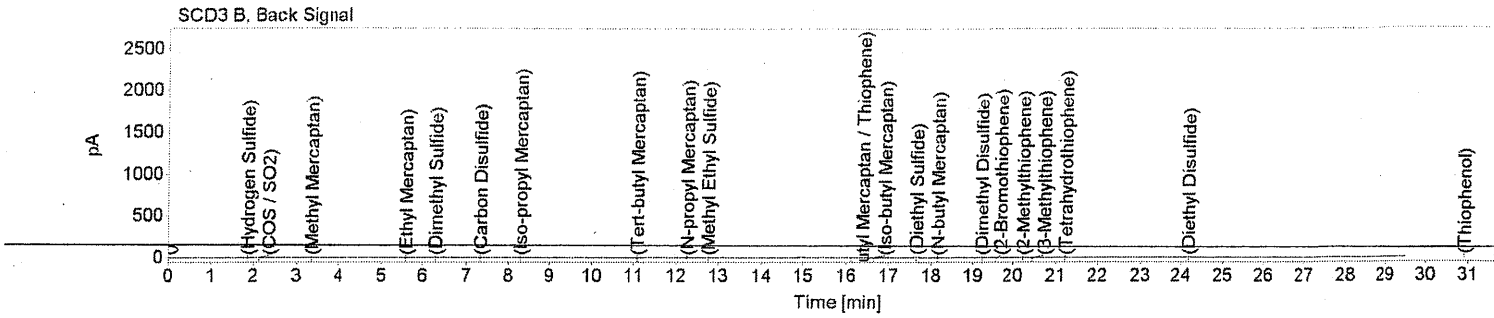
RT [min]	Area	Amount [ppm]	Name
1.871	510.57	0.539	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.318	534.73	0.513	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.268	550.41	0.527	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.579	

7/13/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071321\005B0501.D
Injection date: 7/13/2021 7:26:50 AM
Sample name: Method Blank
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

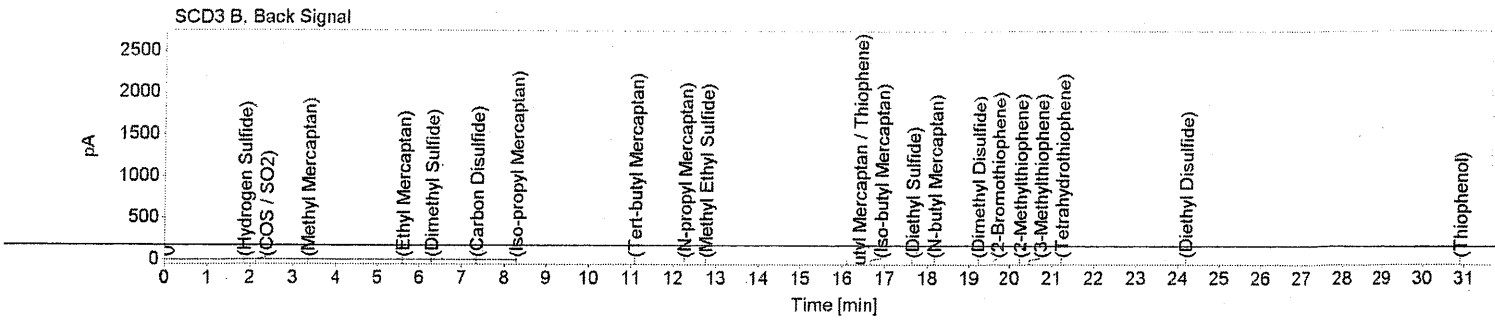
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

7/13/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071321\006B0601.D
Injection date: 7/13/2021 8:07:28 AM
Sample name: 211084-20480
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

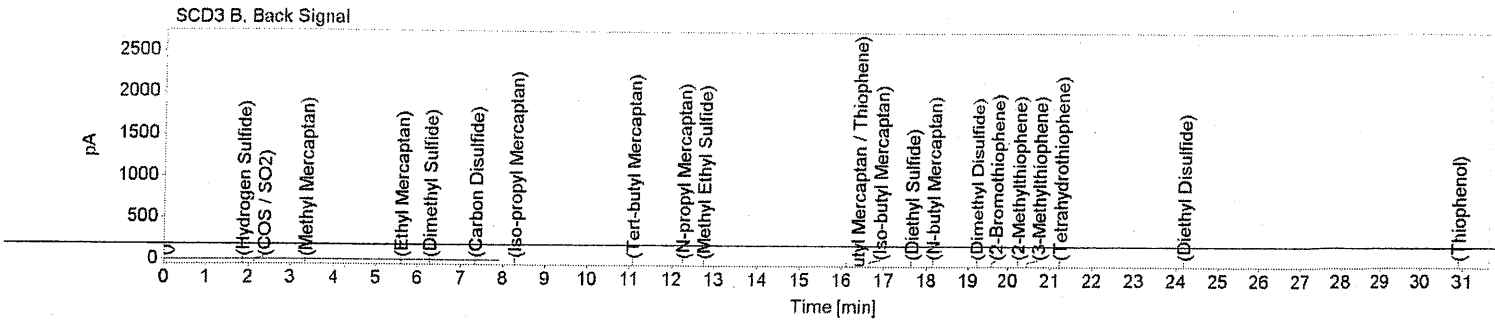
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

7/13/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071321\007B0701.D
Injection date: 7/13/2021 8:16:45 AM
Sample name: 211084-20480 DP
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

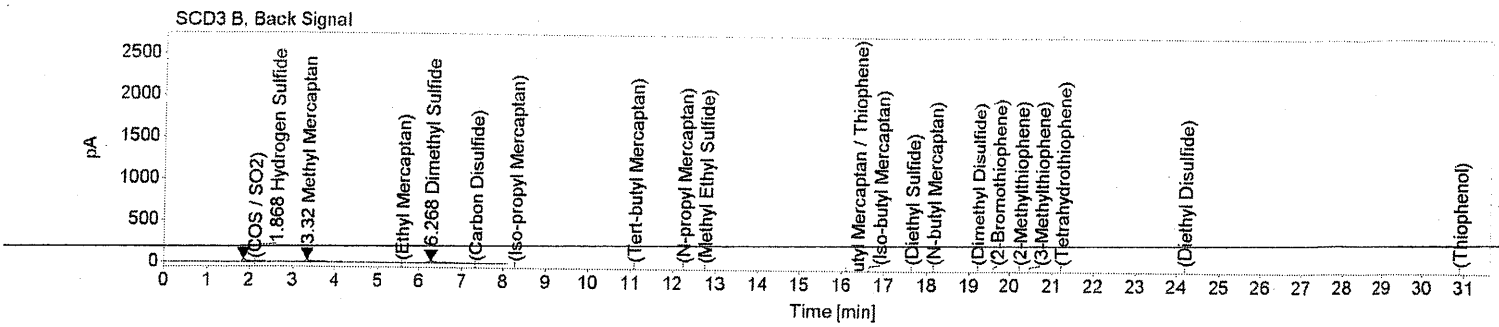
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

7/13/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071321\008B0801.D
Injection date: 7/13/2021 8:26:40 AM
Sample name: 211084-20480 MS (SS1289 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

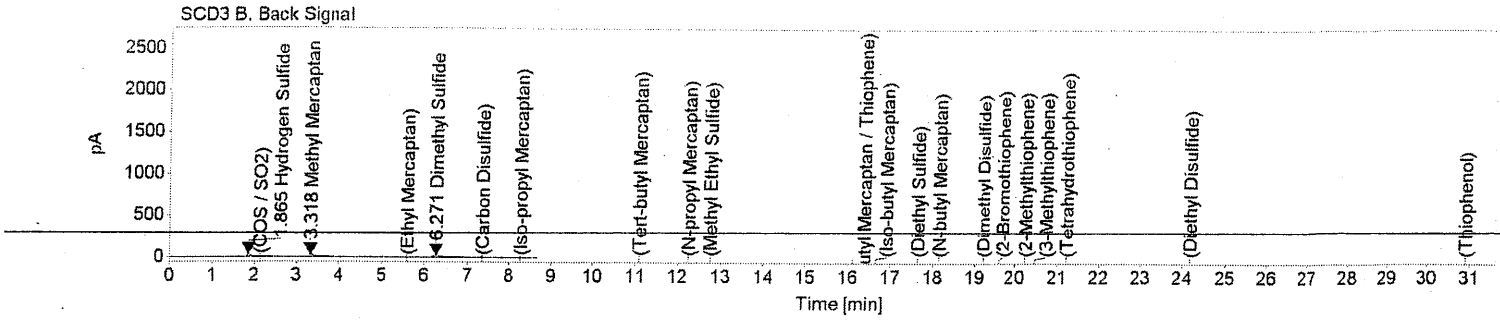
RT [min]	Area	Amount [ppm]	Name
1.868	260.42	0.275	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.320	271.93	0.261	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.268	280.62	0.269	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.805	

7/13/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071321\009B0901.D
Injection date: 7/13/2021 8:37:27 AM
Sample name: 211084-20480 MS (SS1289 x40) DP
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

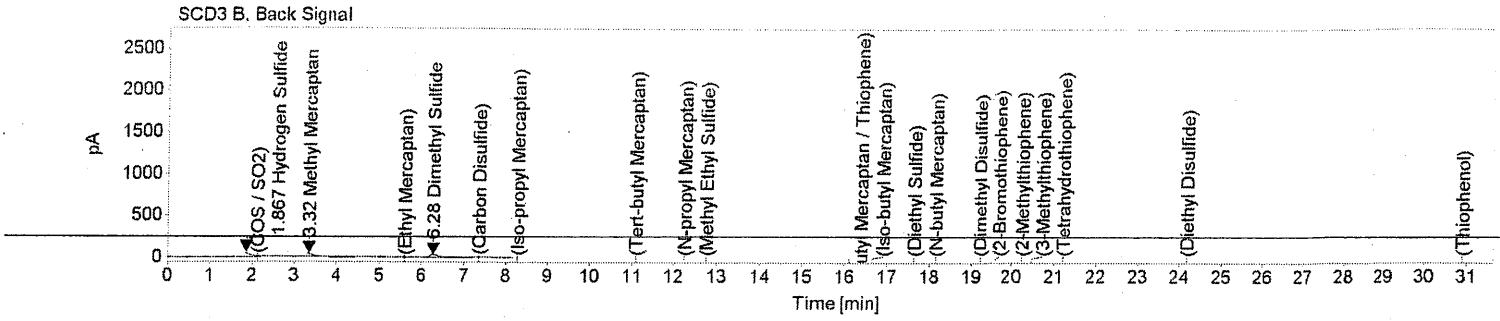
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.865	256.32	0.271	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.318	272.1	0.261	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.271	298.89	0.286	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.818	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071321\014B1401.D
Injection date: 7/13/2021 11:00:49 AM
Sample name: CCV 0.5 ppm H2S/MeSH/DMS (SS11289 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

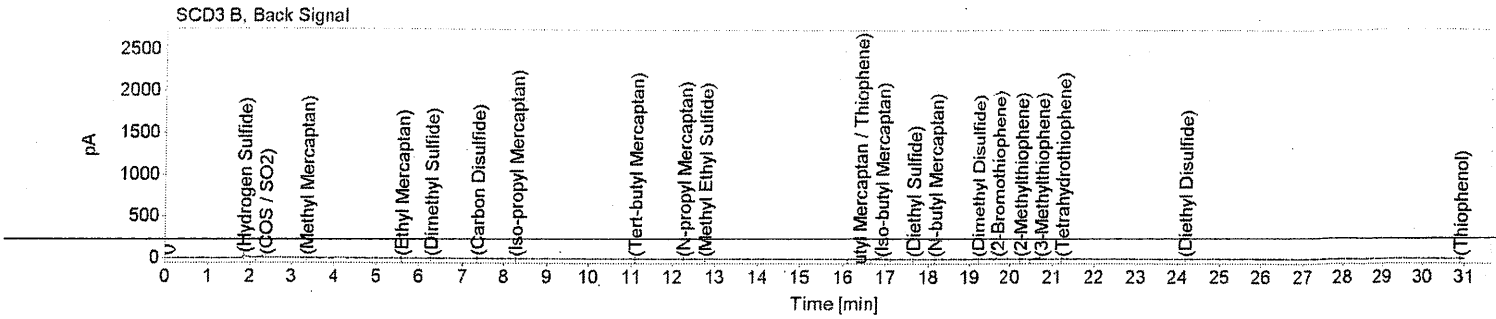
RT [min]	Area	Amount [ppm]	Name
1.867	502.73	0.531	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.320	517.9	0.497	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.280	547.65	0.524	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.552	

7/13/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071321\015B1501.D
Injection date: 7/13/2021 11:33:10 AM
Sample name: RSK-175 WATER BLANK
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

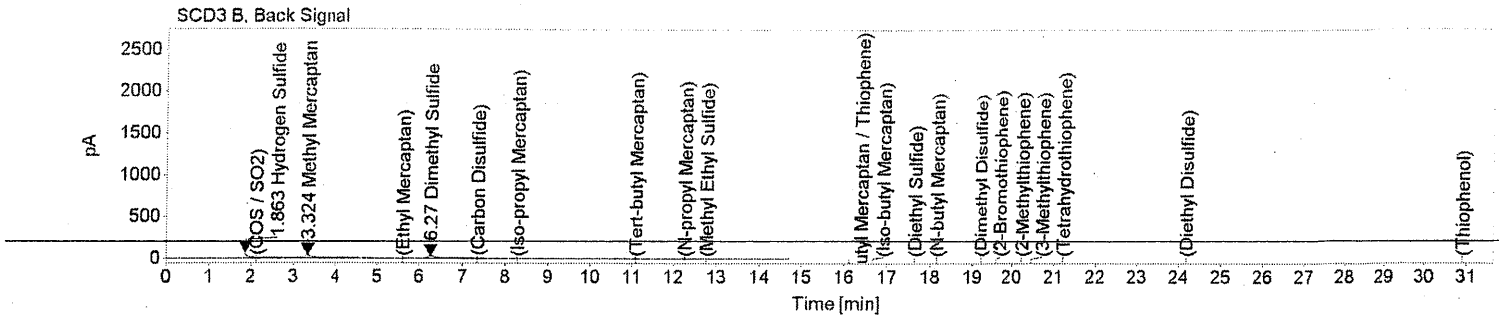
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

7/13/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071321\021B2101.D
Injection date: 7/13/2021 4:12:53 PM
Sample name: CCV 0.5 ppm H2S/MeSH/DMS (SS11289 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

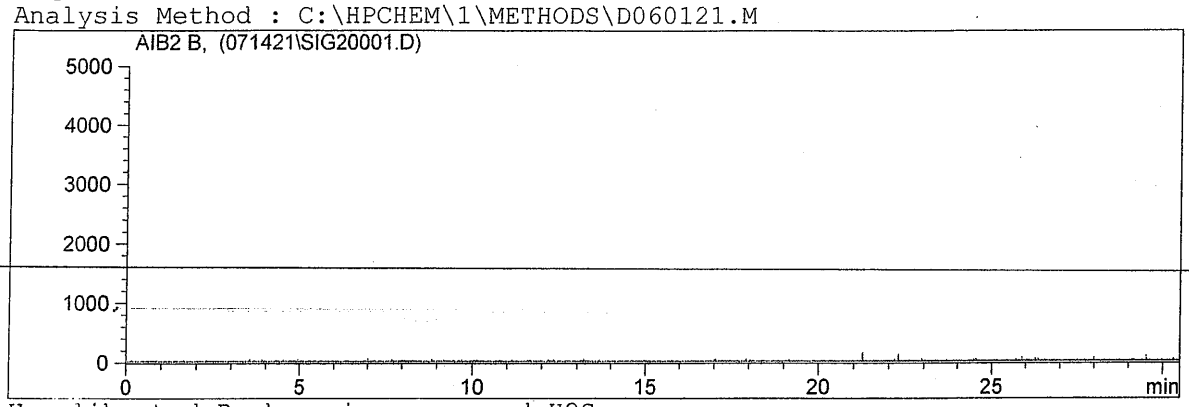
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.863	472.21	0.499	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.324	544.29	0.522	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.270	541.62	0.518	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.539	

Data File C:\HPCHEM\1\DATA\071421\SIG20001.D

Customized Report: D5504

Injection Date : 7/14/2021 5:34:43 AM Seq. Line :1
Sample Name : System Blank
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

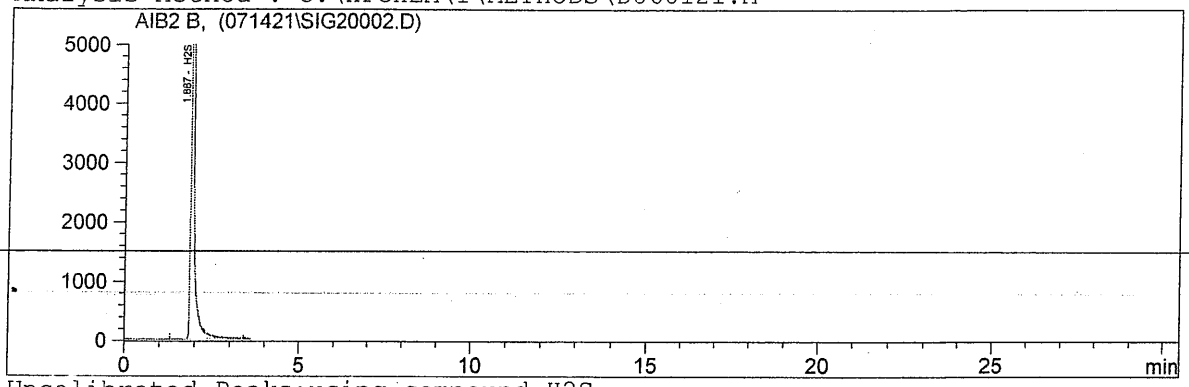
*** End of Report ***

7/14/21

Data File :C:\HPCHEM\1\DATA\071421\SIG20002.D

Customized Report: D5504

Injection Date : 7/14/2021 6:11:19 AM Seq. Line :2
Sample Name : H2S Primer 20 ppm SS1284x1
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

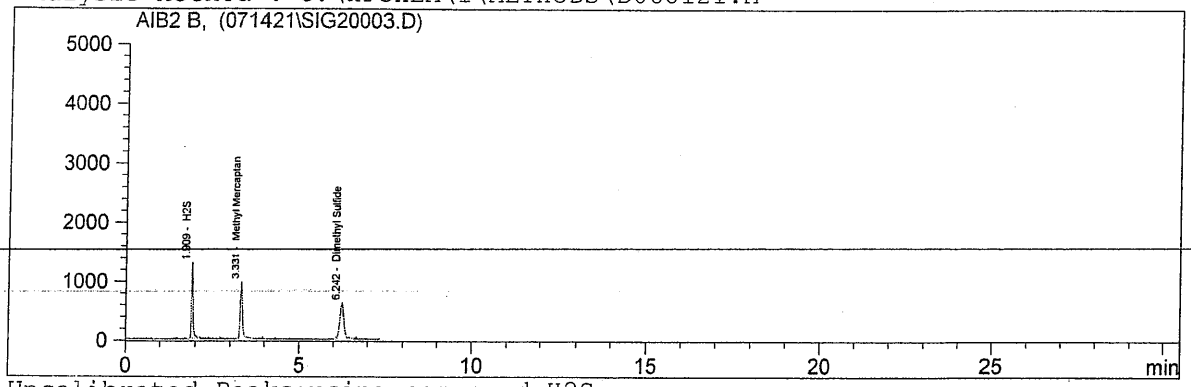
Ret Time [min]	Area	Amount [ppbV]	Name
1.887	152966	22592.360	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		22592.360	

*** End of Report ***

Data File :C:\HPCHEM\1\DATA\071421\SIG20003.D

Customized Report: D5504

Injection Date : 7/14/2021 6:16:53 AM Seq. Line :3
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.909	3565	526.576	H2S
0.000	0	0.000	COS / SO2
3.331	4338	517.269	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.242	4720	506.572	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1550.417	

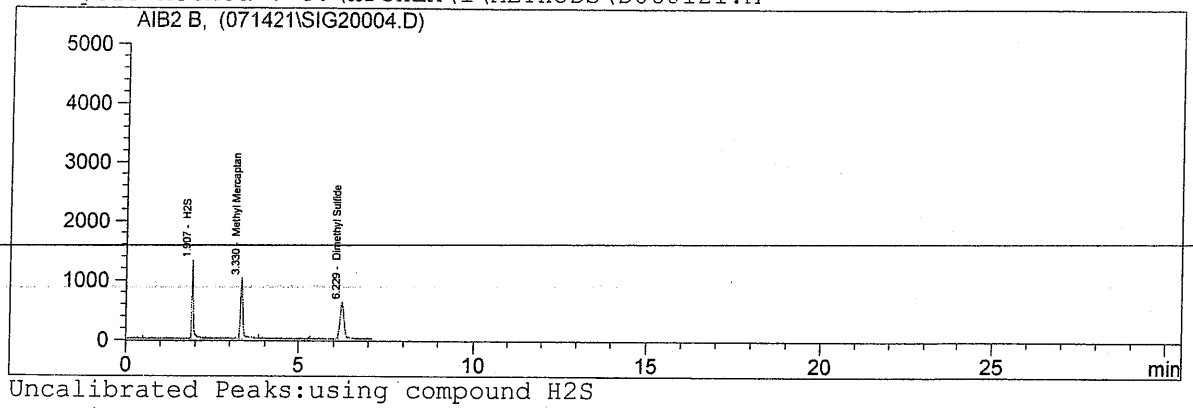
*** End of Report ***

7/14/21

Data File :C:\HPCHEM\1\DATA\071421\SIG20004.D

Customized Report: D5504

Injection Date : 7/14/2021 6:25:55 AM Seq. Line :4
Sample Name : CCV 500 ppbV dp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

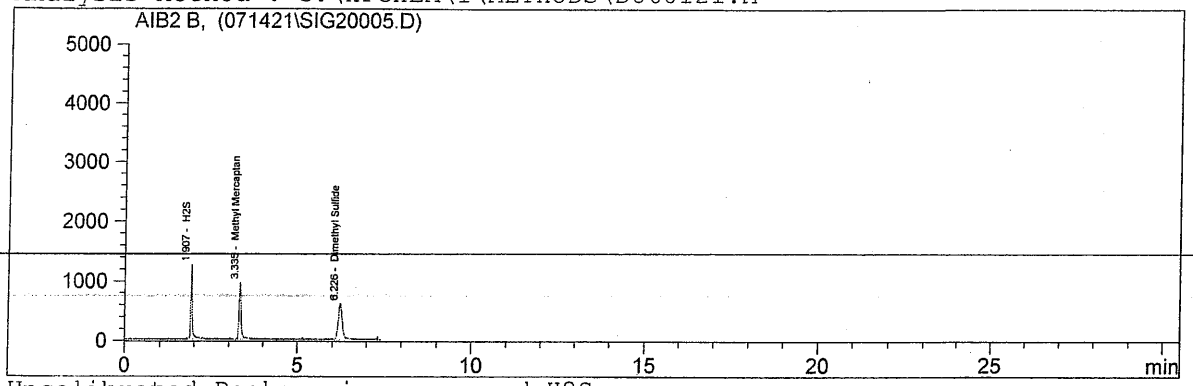
Ret Time [min]	Area	Amount [ppbV]	Name
1.907	3584	529.299	H2S
0.000	0	0.000	COS / SO2
3.330	4393	523.804	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.229	4672	501.384	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1554.487	

*** End of Report ***

7/14/21

Customized Report: D5504

Injection Date : 7/14/2021 6:34:48 AM Seq. Line :5
Sample Name : CCV 500 ppbV tp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.907	3524	520.514	H2S
0.000	0	0.000	COS / SO2
3.335	4273	509.546	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.226	4805	515.625	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
		1545.685	Totals:

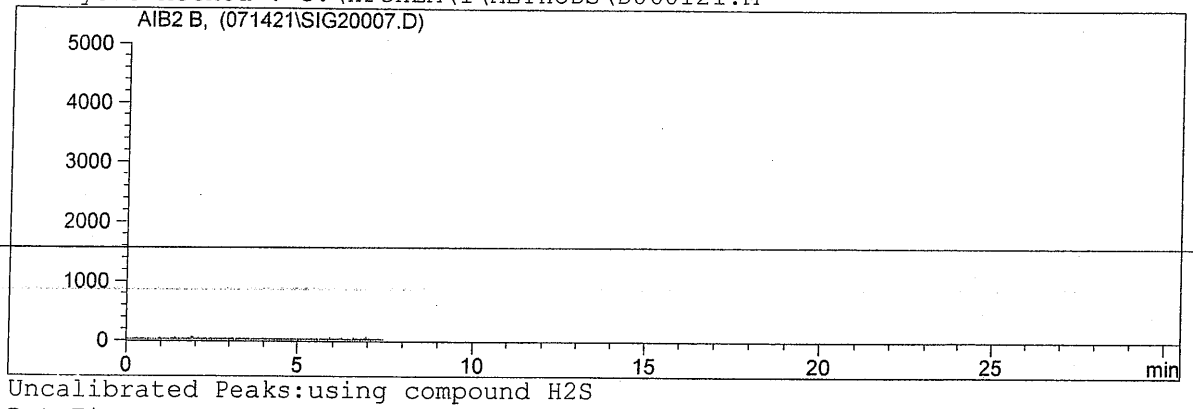
*** End of Report ***

7/14/21

Data File :C:\HPCHEM\1\DATA\071421\SIG20007.D

Customized Report: D5504

Injection Date : 7/14/2021 7:20:24 AM Seq. Line :7
Sample Name : 211084-20480 x5
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 5.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

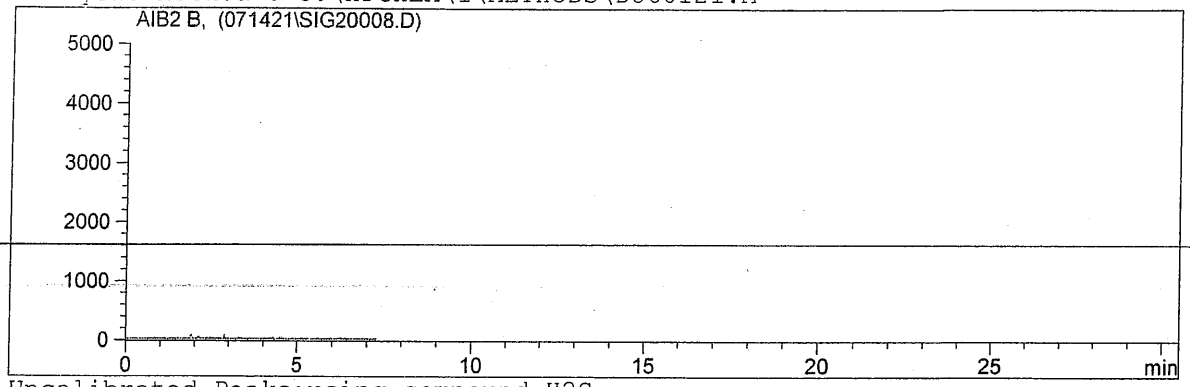
*** End of Report ***

7/14/21

Data File :C:\HPCHEM\1\DATA\071421\SIG20008.D

Customized Report: D5504

Injection Date : 7/14/2021 7:29:21 AM Seq. Line :8
Sample Name : 211084-20480 x5 dp
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

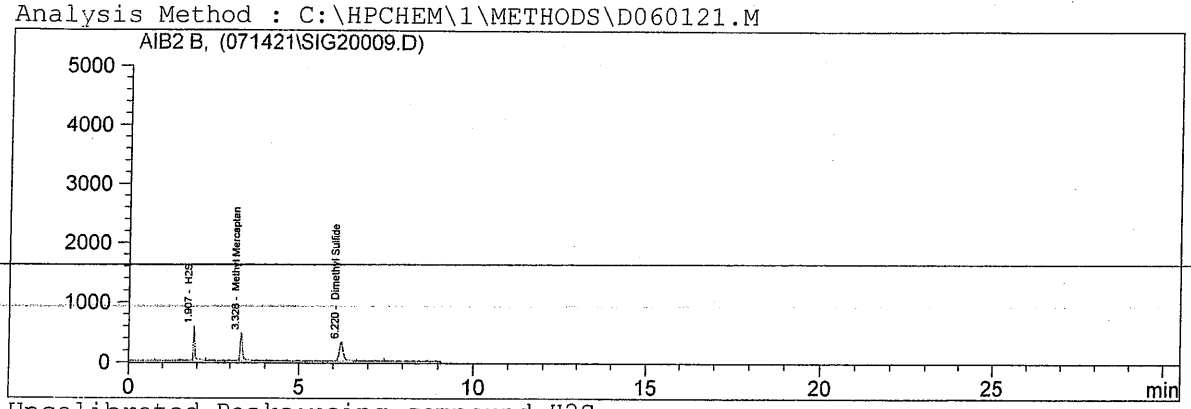
Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\071421\SIG20009.D

Customized Report: D5504

Injection Date : 7/14/2021 7:38:44 AM Seq. Line :9
Sample Name : 211084-20480 MS x10 H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



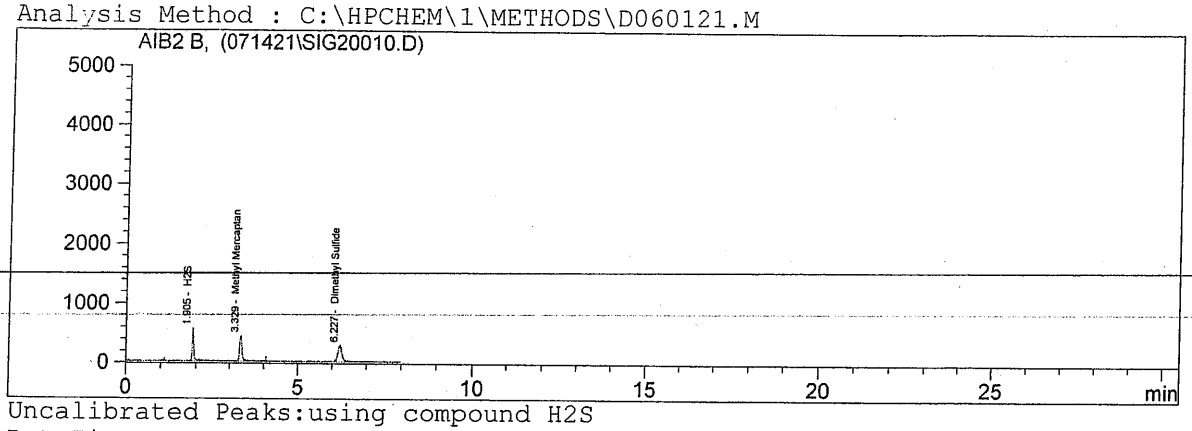
Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.907	1673	247.119	H2S
0.000	0	0.000	COS / SO2
3.328	2146	255.857	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.220	2504	268.668	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
		771.644	Totals:

*** End of Report ***

Customized Report: D5504

Injection Date : 7/14/2021 7:49:57 AM Seq. Line :10
Sample Name : 211084-20480 MSD x10 H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.905	1640	242.260	H2S
0.000	0	0.000	COS / SO2
3.329	2105	251.057	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.227	2422	259.904	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		753.221	

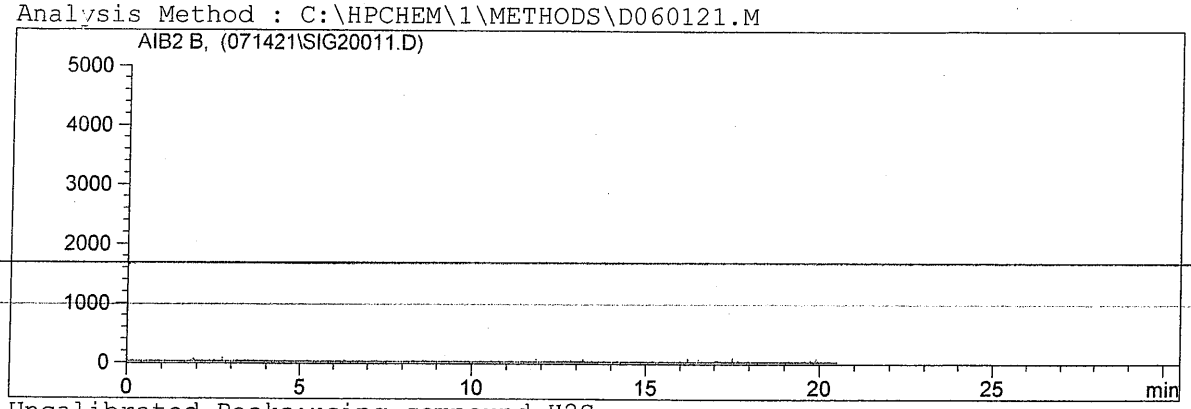
*** End of Report ***

7/14/21

Data file :C:\HPCHEM\1\DATA\071421\SIG20011.D

Customized Report: D5504

Injection Date : 7/14/2021 8:01:31 AM Seq. Line :11
Sample Name : RSK-175 H20 BK
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

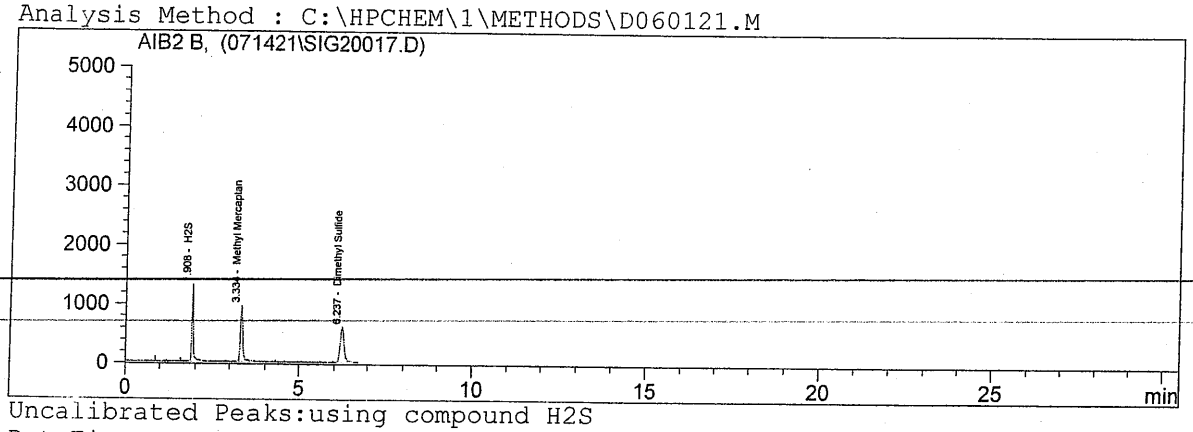
*** End of Report ***

7/14/21

Data File : C:\HPCHEM\1\DATA\071421\SIG20017.D

Customized Report: D5504

Injection Date : 7/14/2021 11:20:08 AM Seq. Line :17
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



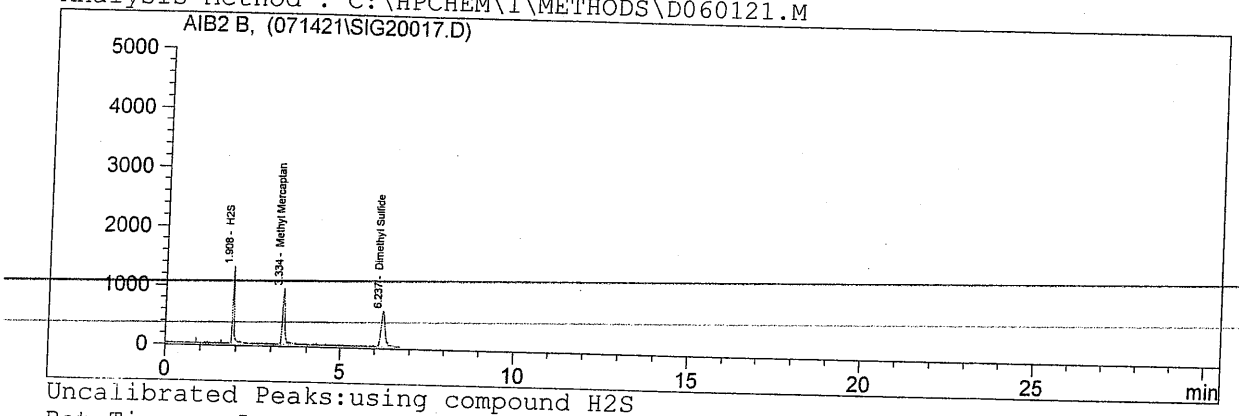
Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.908	3631	536.253	H2S
0.000	0	0.000	COS / SO2
3.334	4388	523.301	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.237	4781	513.106	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1572.660	

*** End of Report ***

Customized Report: D5504

Injection Date : 7/14/2021 11:20:08 AM Seq. Line :17
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



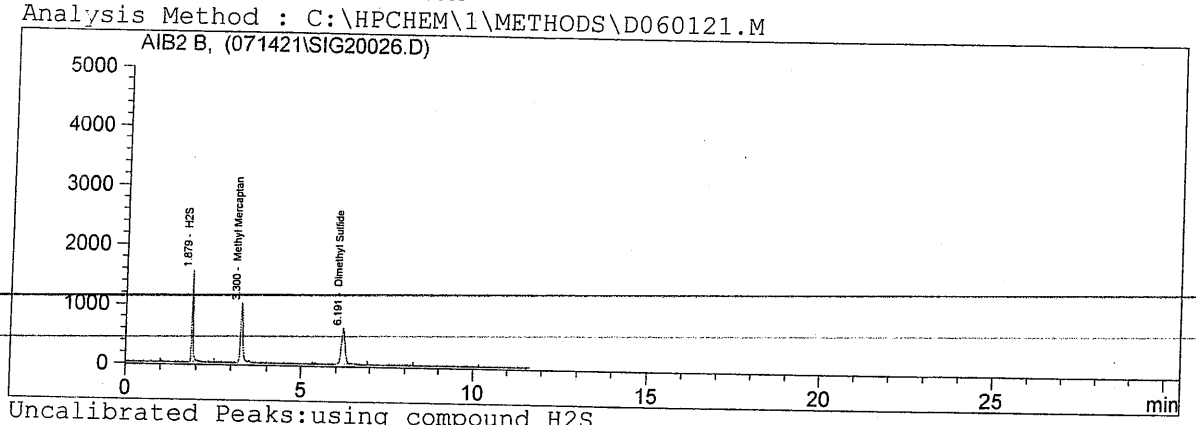
Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.908	3631	536.253	H2S
0.000	0	0.000	COS / SO2
3.334	4388	523.301	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.237	4781	513.106	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1572.660	

*** End of Report ***

Customized Report: D5504

Injection Date : 7/14/2021 3:20:28 PM Seq. Line :26
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



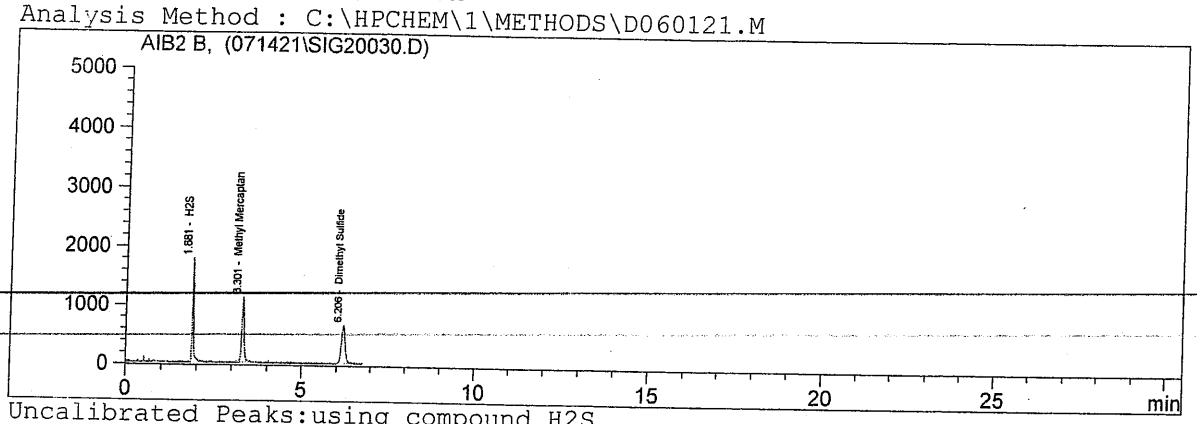
Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.879	3592	530.483	H2S
0.000	0	0.000	COS / SO2
3.300	4293	511.929	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.191	4707	505.122	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1547.534	

*** End of Report ***

Customized Report: D5504

Injection Date : 7/14/2021 4:54:21 PM Seq. Line :30
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.881	3777	557.847	H2S
0.000	0	0.000	COS / SO2
3.301	4481	534.359	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.206	4949	531.084	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1623.290	

*** End of Report ***

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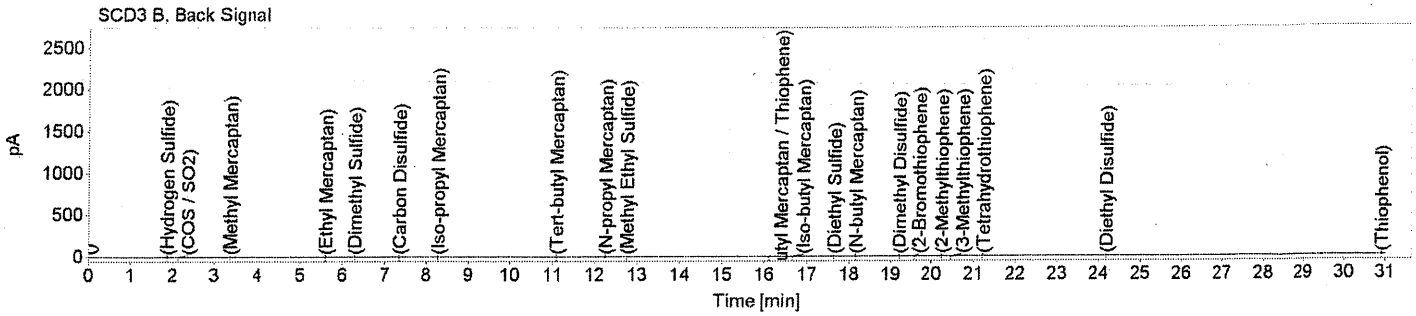
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071421\001B0101.D
Injection date: 7/14/2021 5:33:48 AM
Sample name: System Blank
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

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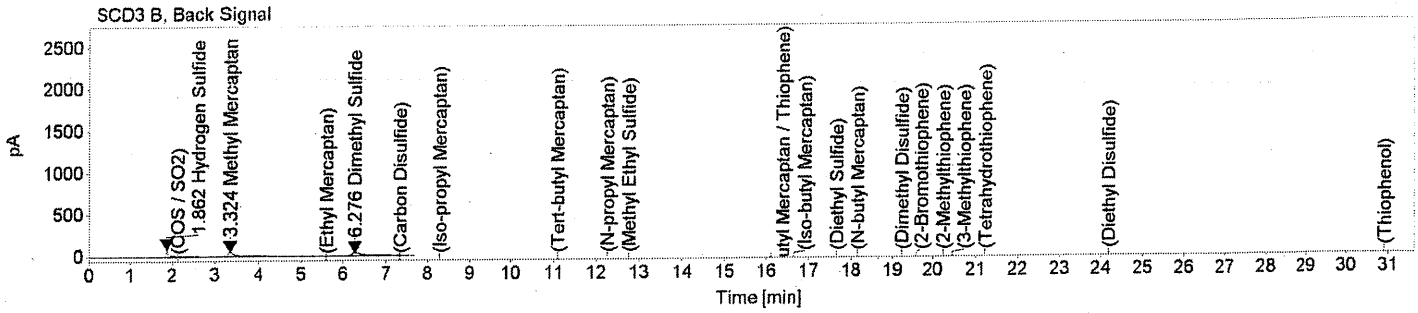
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071421\002B0201.D
Injection date: 7/14/2021 6:12:39 AM
Sample name: CCV 0.5 ppm H2S/MeSH/DMS (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

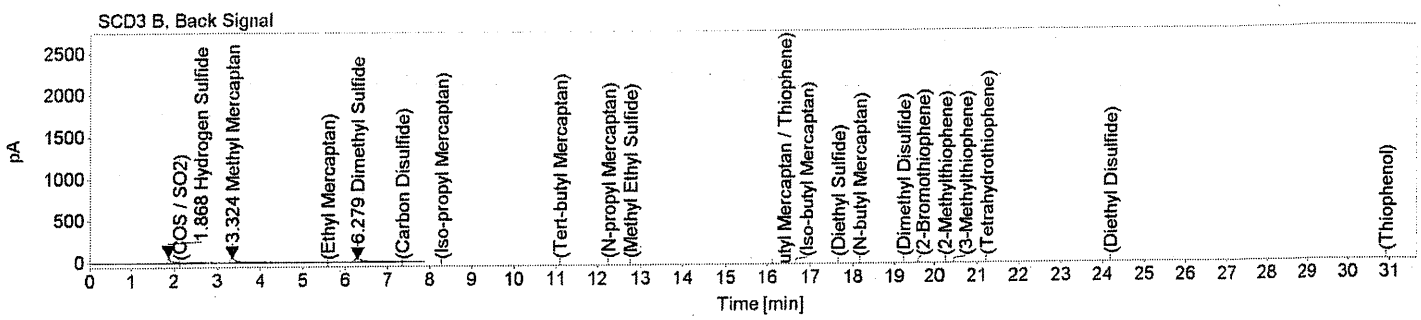
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.862	497.12	0.525	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.324	526.19	0.505	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.276	541.92	0.519	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.549	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071421\003B0301.D
Injection date: 7/14/2021 6:22:19 AM
Sample name: CCV 0.5 ppm H2S/MeSH/DMS (SS1192 x40)dp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

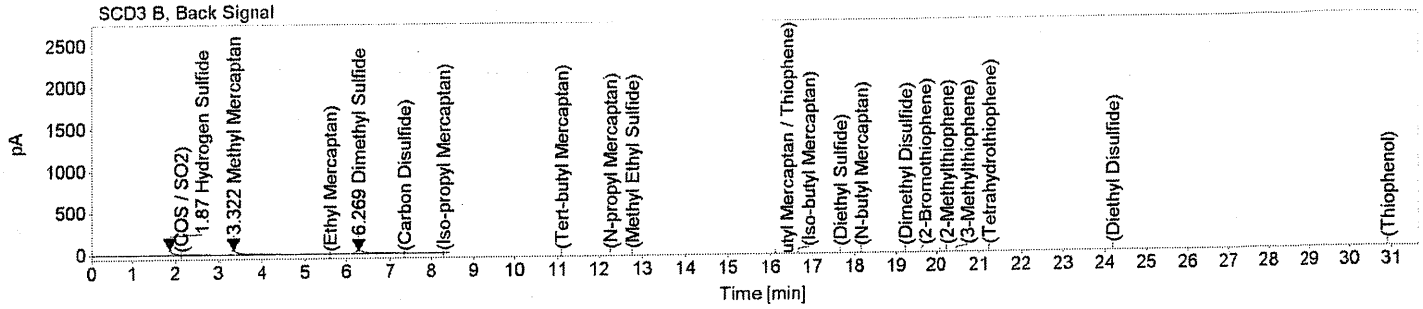
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.868	490.25	0.518	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.324	524.83	0.504	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.279	552.83	0.529	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.550	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071421\004B0401.D
Injection date: 7/14/2021 6:32:32 AM
Sample name: CCV 0.5 ppm H2S/MeSH/DMS (SS1192 x40)tp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.870	503.98	0.532	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.322	520.86	0.500	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.269	537.75	0.515	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.547	

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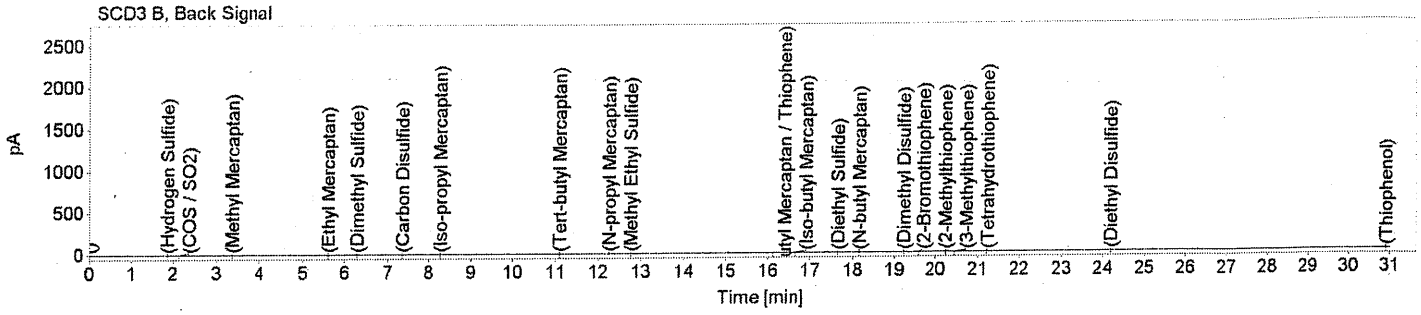
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071421\005B0501.D
Injection date: 7/14/2021 6:42:57 AM
Sample name: Method Blank
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

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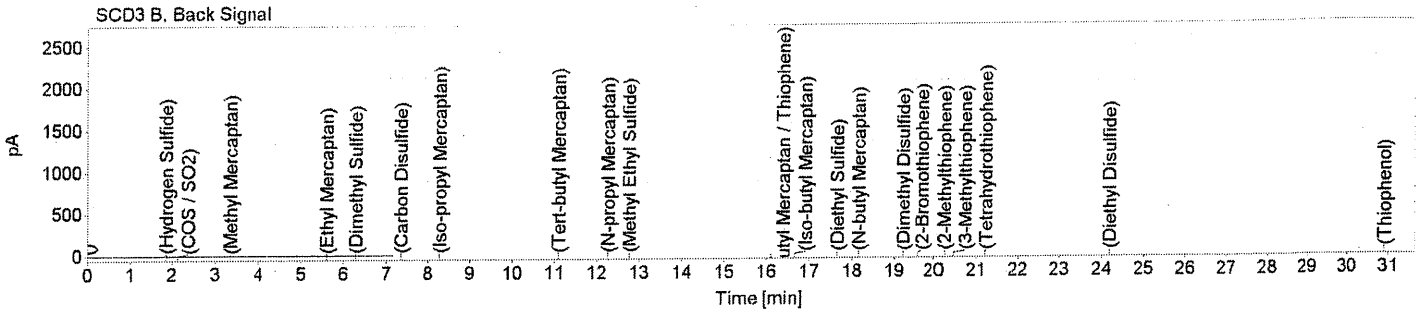
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071421\006B0601.D
Injection date: 7/14/2021 7:19:59 AM
Sample name: 211084-20480 x5
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 5



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

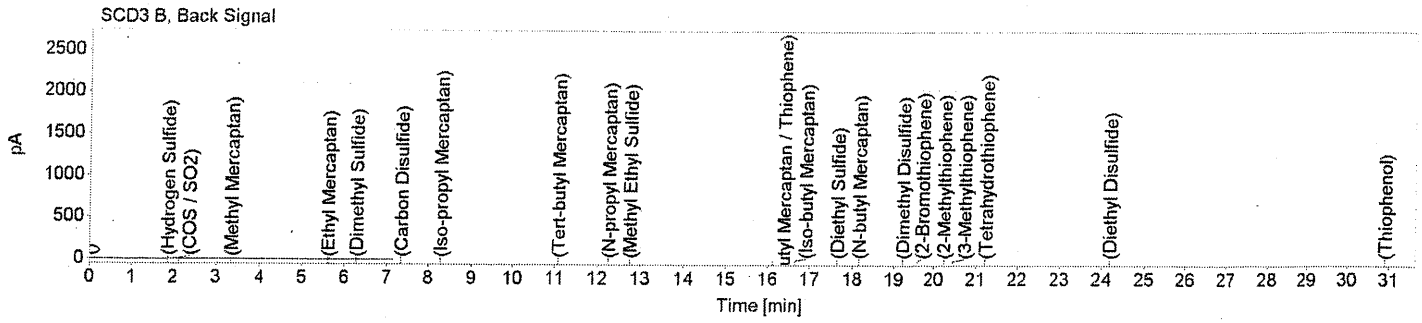
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

7/14/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071421\007B0701.D
Injection date: 7/14/2021 7:28:39 AM
Sample name: 211084-20480 x5
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 5



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

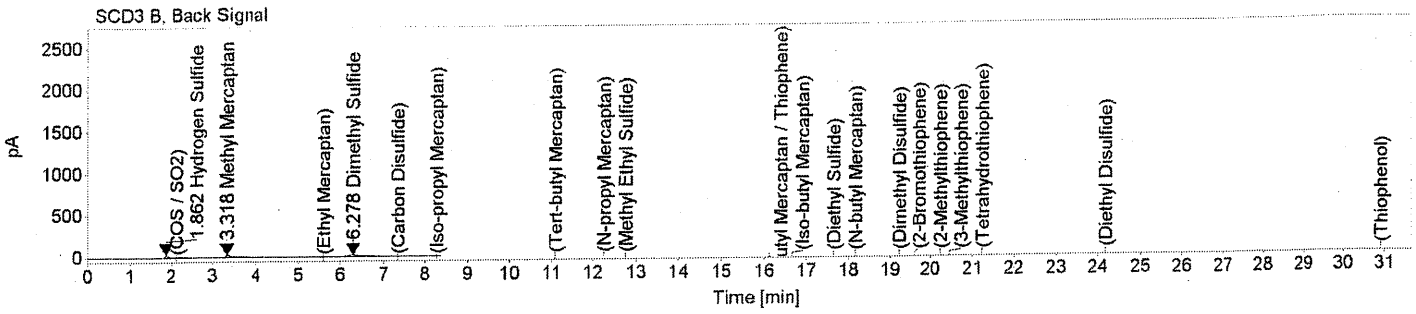
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

7/14/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071421\008B0801.D
Injection date: 7/14/2021 7:38:17 AM
Sample name: 211084-20480 x5 MS (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.862	240.84	0.254	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.318	264.72	0.254	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.278	290.48	0.278	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.786	

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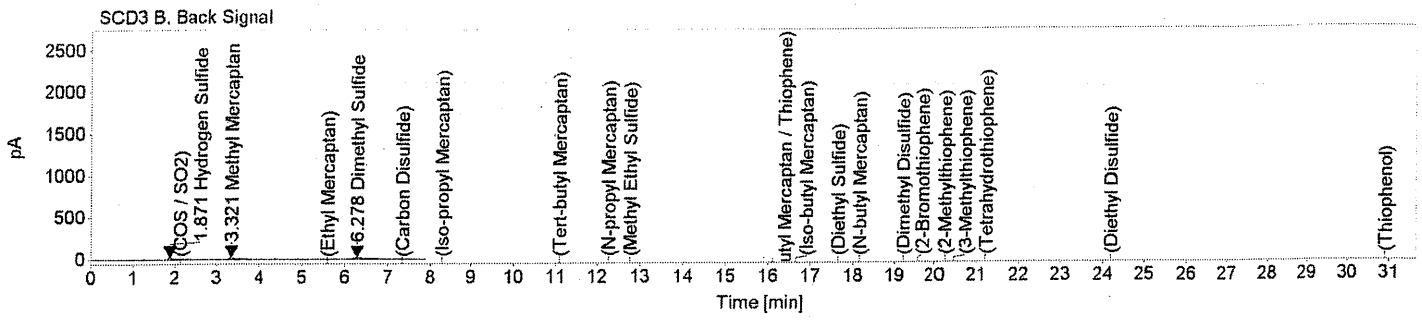
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071421\009B0901.D
Injection date: 7/14/2021 7:49:32 AM
Sample name: 211084-20480 x5 MSD (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

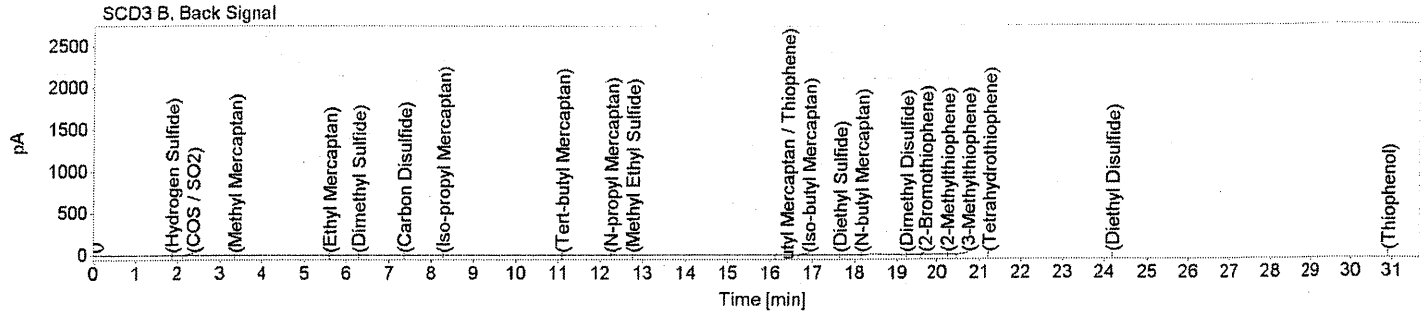
RT [min]	Area	Amount [ppm]	Name
1.871	243.16	0.257	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.321	257.5	0.247	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.278	270.95	0.259	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.763	

7/14/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071421\010B1001.D
Injection date: 7/14/2021 8:00:30 AM
Sample name: RSK-175 H20 Blank
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

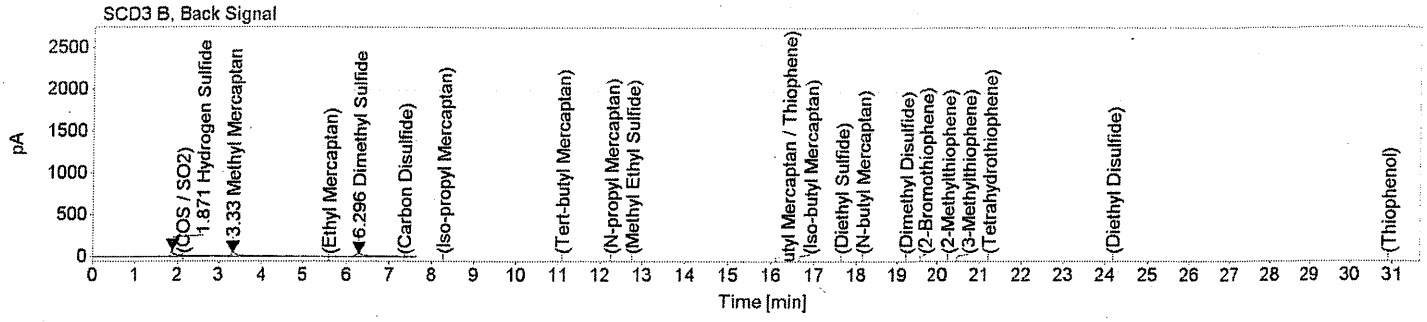
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071421\024B2401.D
Injection date: 7/14/2021 4:40:51 PM
Sample name: CCV 0.5 ppm H2S/MeSH/DMS (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



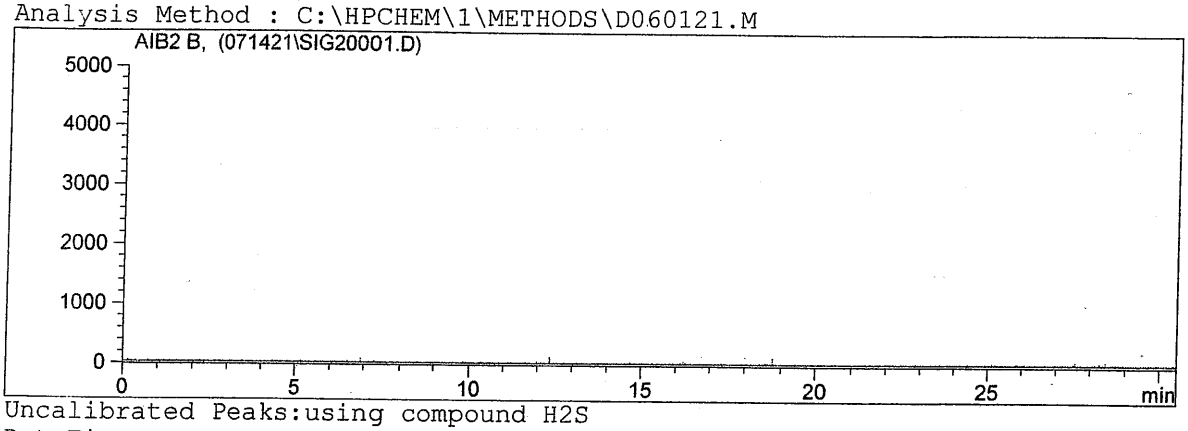
Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.871	522.27	0.552	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.330	552.56	0.530	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.296	566.76	0.542	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.624	

Customized Report: D5504

Injection Date : 7/15/2021 5:34:33 AM Seq. Line :1
Sample Name : System Blank
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

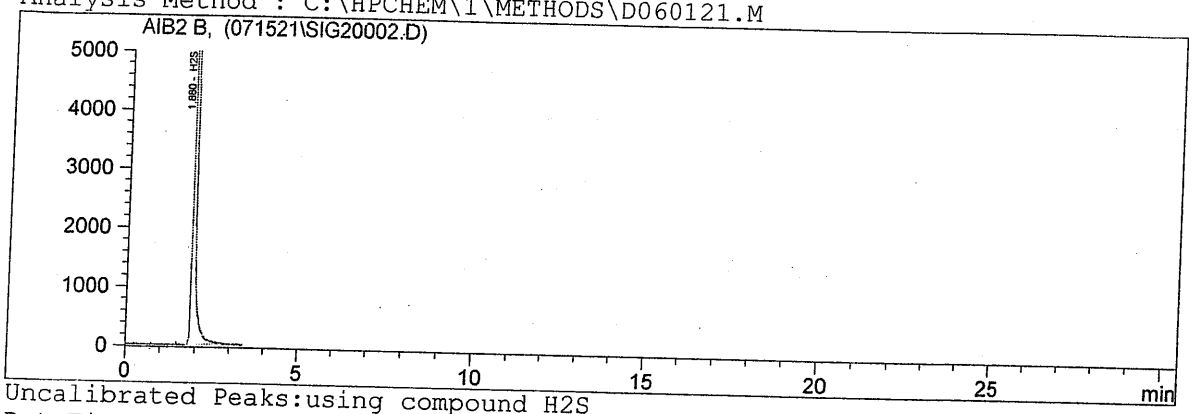
Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

*** End of Report ***

5/16/24

Customized Report: D5504

Injection Date : 7/15/2021 6:11:31 AM Seq. Line :2
Sample Name : H2S Primer 20 ppm SS1284x1
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.880	149071	22017.117	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		22017.117	

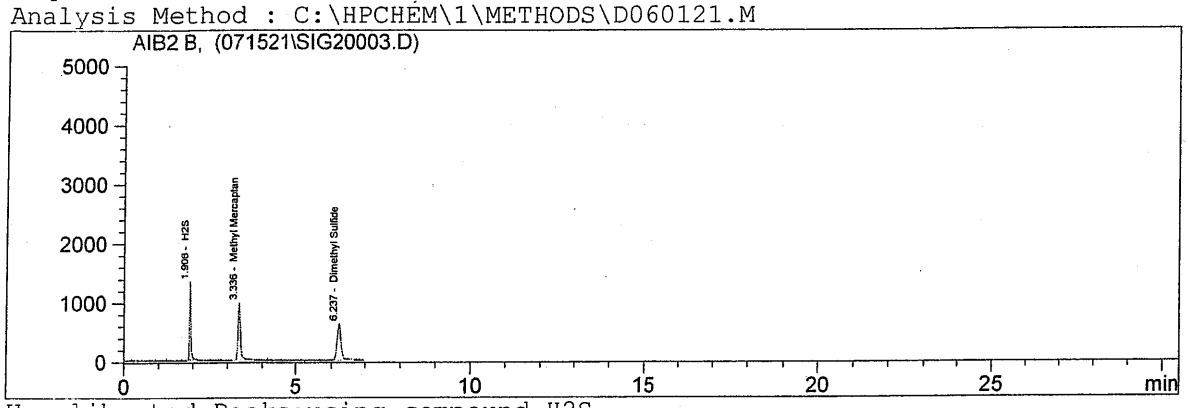
*** End of Report ***

7/15

Data File :C:\HPCHEM\1\DATA\071521\SIG20003.D

Customized Report: D5504

Injection Date : 7/15/2021 6:17:04 AM Seq. Line :3
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

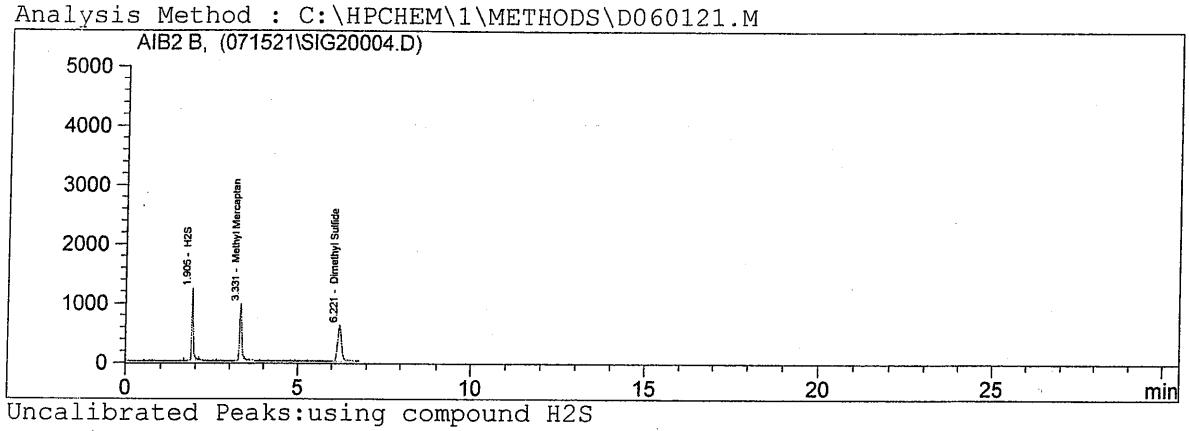
Ret Time [min]	Area	Amount [ppbV]	Name
1.906	3561	525.899	H2S
0.000	0	0.000	COS / SO2
3.336	4418	526.805	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.237	4941	530.221	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1582.926	

*** End of Report ***

Data File C:\HPCHEM\1\DATA\071521\SIG20004.D

Customized Report: D5504

Injection Date : 7/15/2021 6:25:49 AM Seq. Line :4
Sample Name : CCV 500 ppbV dp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.905	3494	516.045	H2S
0.000	0	0.000	COS / SO2
3.331	4308	513.735	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.221	4815	516.686	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1546.465	

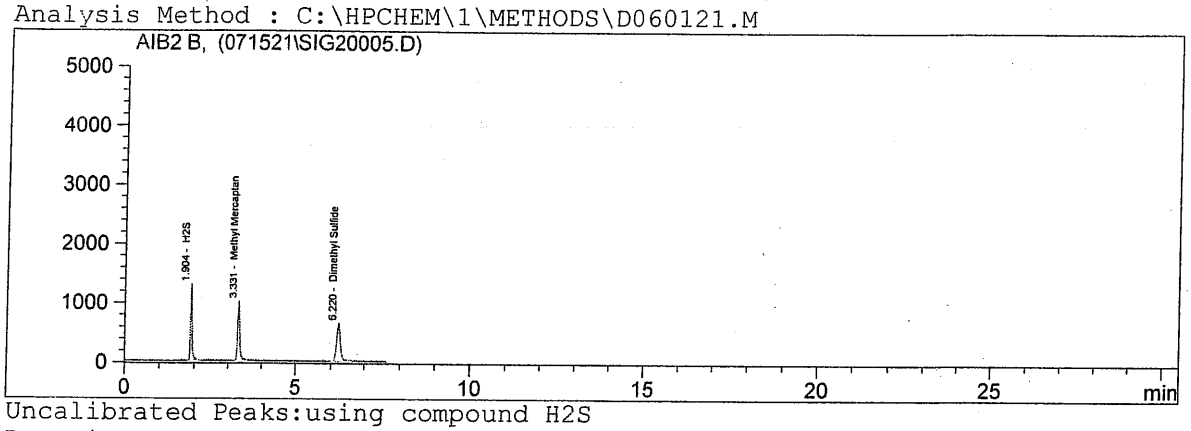
*** End of Report ***

7/15/21

Data File C:\HPCHEM\1\DATA\071521\SIG20005.D

Customized Report: D5504

Injection Date : 7/15/2021 6:34:17 AM Seq. Line :5
Sample Name : CCV 500 ppbV tp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

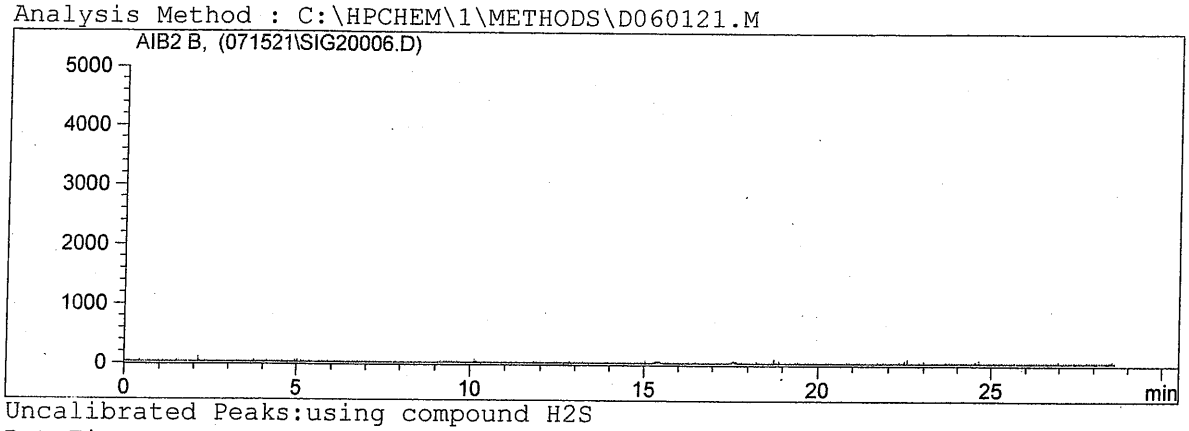
Ret Time [min]	Area	Amount [ppbV]	Name
1.904	3653	539.599	H2S
0.000	0	0.000	COS / SO2
3.331	4410	525.852	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.220	5031	539.874	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1605.324	

*** End of Report ***

Data File :C:\HPCHEM\1\DATA\071521\SIG20006.D

Customized Report: D5504

Injection Date : 7/15/2021 6:43:23 AM Seq. Line :6
Sample Name : Method Blank
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

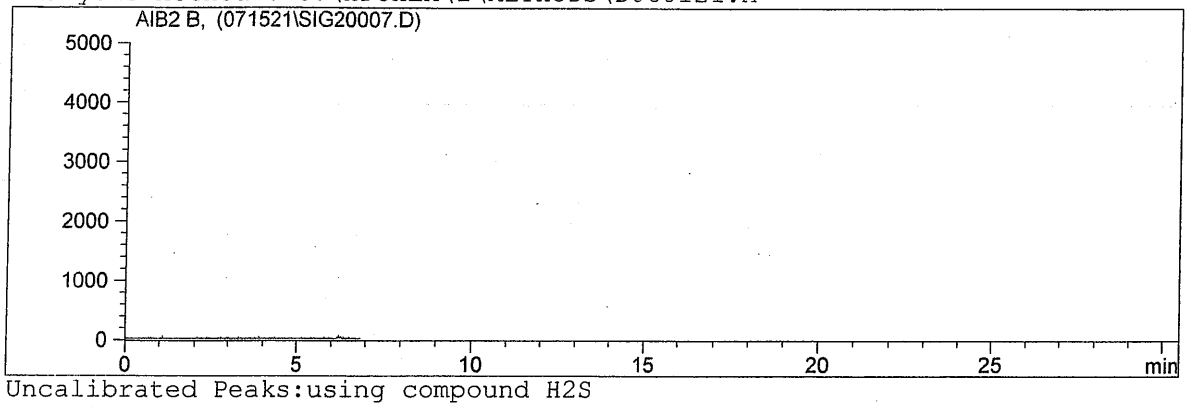
*** End of Report ***

7/15/21

Data File :C:\HPCHEM\1\DATA\071521\SIG20007.D

Customized Report: D5504

Injection Date : 7/15/2021 7:17:34 AM Seq. Line :7
Sample Name : 211084-20480 x5
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 5.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
		0.000	

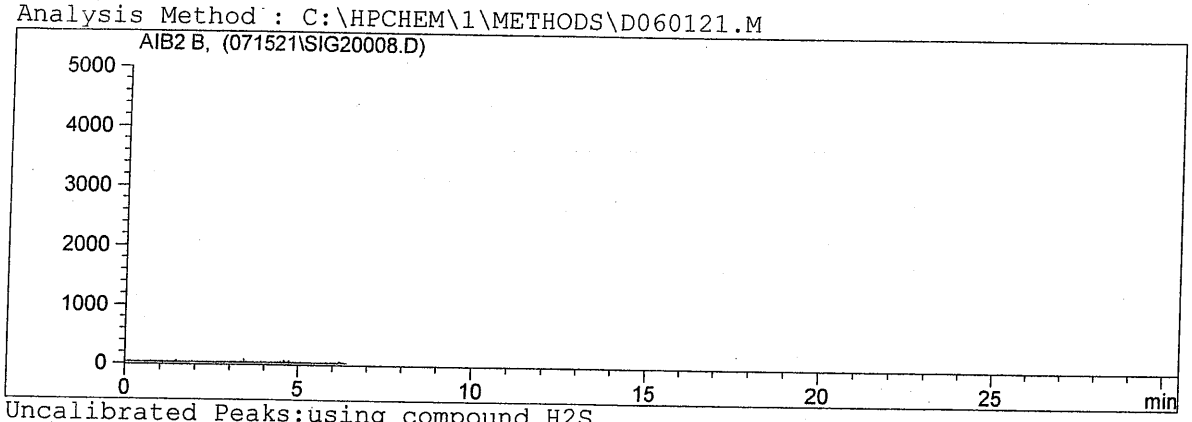
Totals:

*** End of Report ***

7/15/21

Customized Report: D5504

Injection Date : 7/15/2021 7:25:58 AM Seq. Line :8
Sample Name : 211084-20480 x5 dp
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

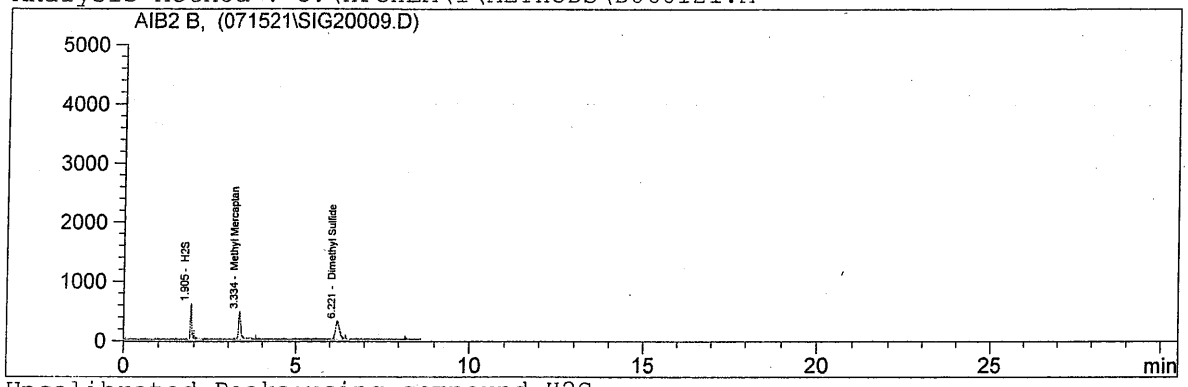
*** End of Report ***

3/15/21

Data File :C:\HPCHEM\1\DATA\071521\SIG20009.D

Customized Report: D5504

Injection Date : 7/15/2021 7:35:02 AM Seq. Line :9
Sample Name : 211084-20480 MS x10 H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

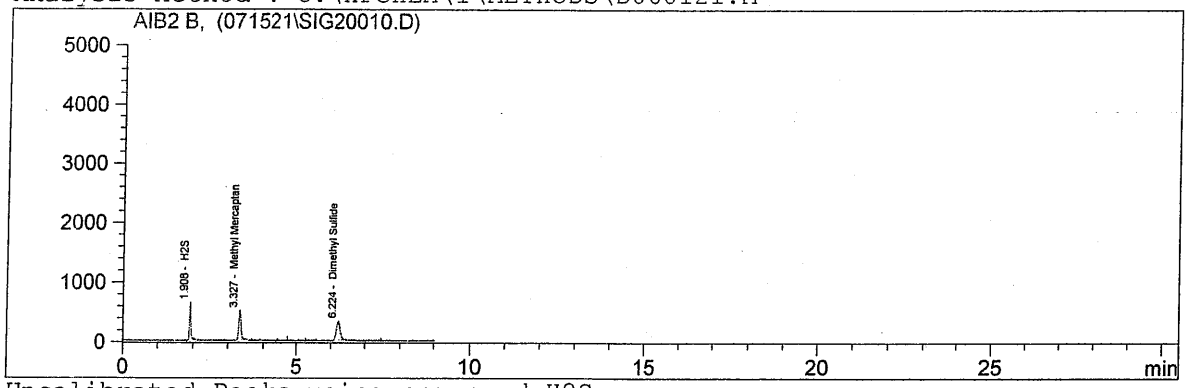
Ret Time [min]	Area	Amount [ppbV]	Name
1.905	1785	263.656	H2S
0.000	0	0.000	COS / SO2
3.334	2176	259.476	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.221	2459	263.894	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		787.027	

*** End of Report ***

7/15/21

Customized Report: D5504

Injection Date : 7/15/2021 7:46:50 AM Seq. Line :10
Sample Name : 211084-20480 MSD x10 H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.908	1749	258.331	H2S
0.000	0	0.000	COS / SO2
3.327	2172	258.971	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.224	2407	258.277	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
		775.578	
Totals:			

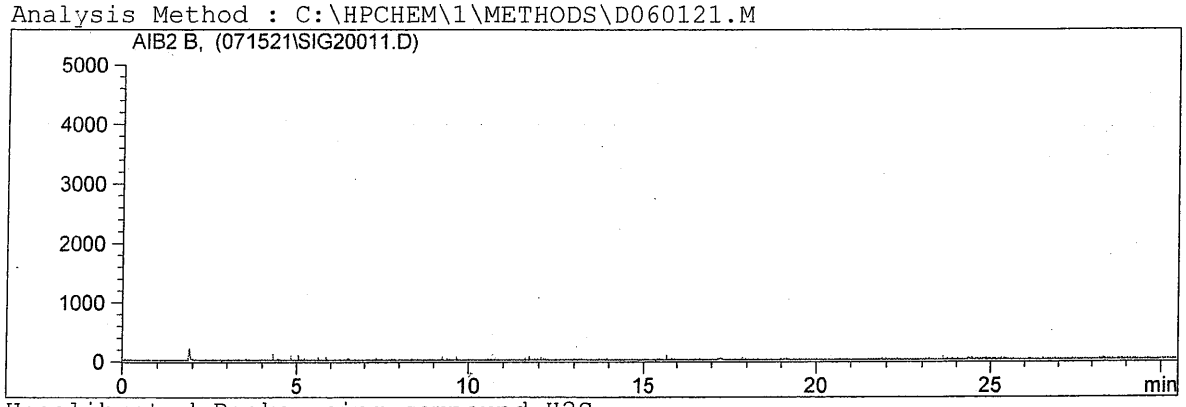
*** End of Report ***

7/15/21

Data File :C:\HPCHEM\1\DATA\071521\SIG20011.D

Customized Report: D5504

Injection Date : 7/15/2021 7:57:28 AM Seq. Line :11
Sample Name : RSK-175 H20 BK
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
30.813	34	4.974	
0.000	0	0.000	Thiophenol
Totals:		4.974	

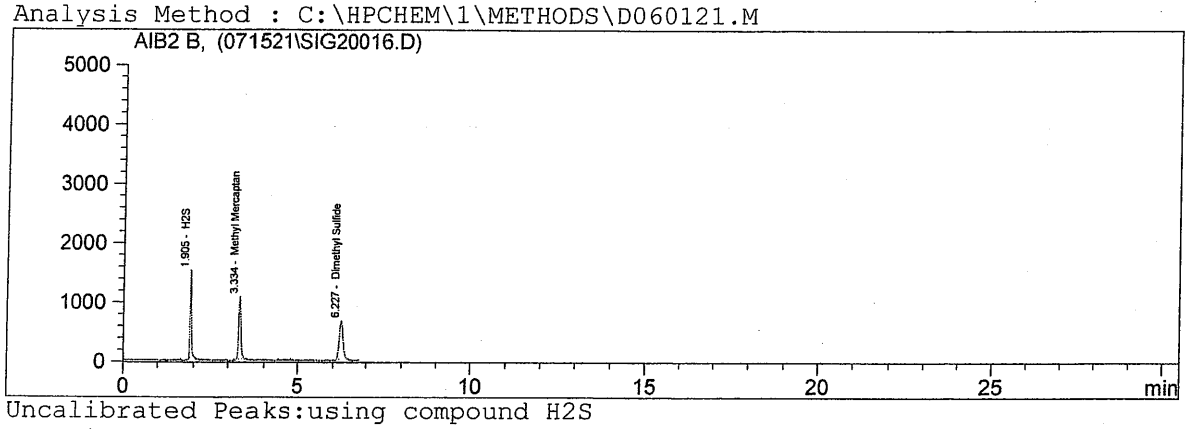
*** End of Report ***

7/15/21

Data File :C:\HPCHEM\1\DATA\071521\SIG20016.D

Customized Report: D5504

Injection Date : 7/15/2021 10:49:29 AM Seq. Line :16
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.905	3593	530.719	H2S
0.000	0	0.000	COS / SO2
3.334	4447	530.349	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.227	4738	508.457	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1569.525	

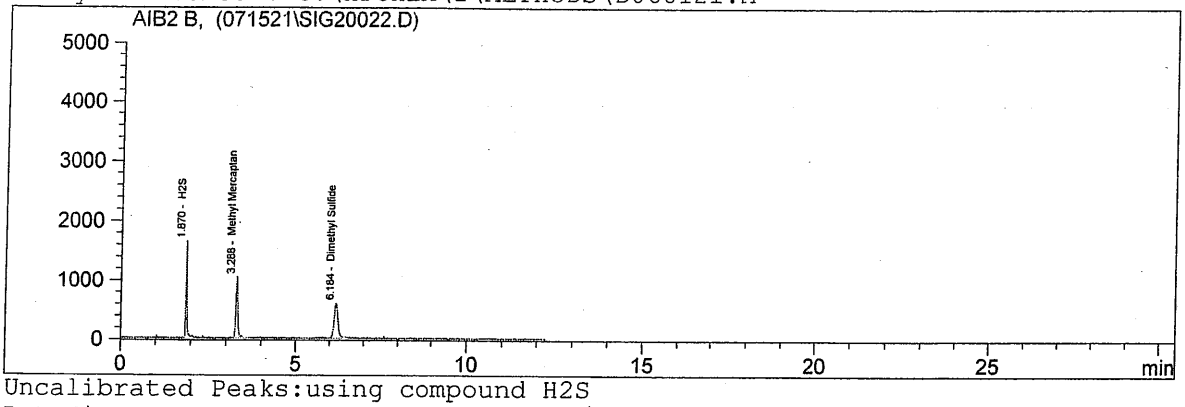
*** End of Report ***

5/14/21

Data File :C:\HPCHEM\1\DATA\071521\SIG20022.D

Customized Report: D5504

Injection Date : 7/15/2021 2:29:08 PM Seq. Line :22
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.870	3645	538.376	H2S
0.000	0	0.000	COS / SO2
3.288	4211	502.181	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.184	4669	501.101	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1541.658	

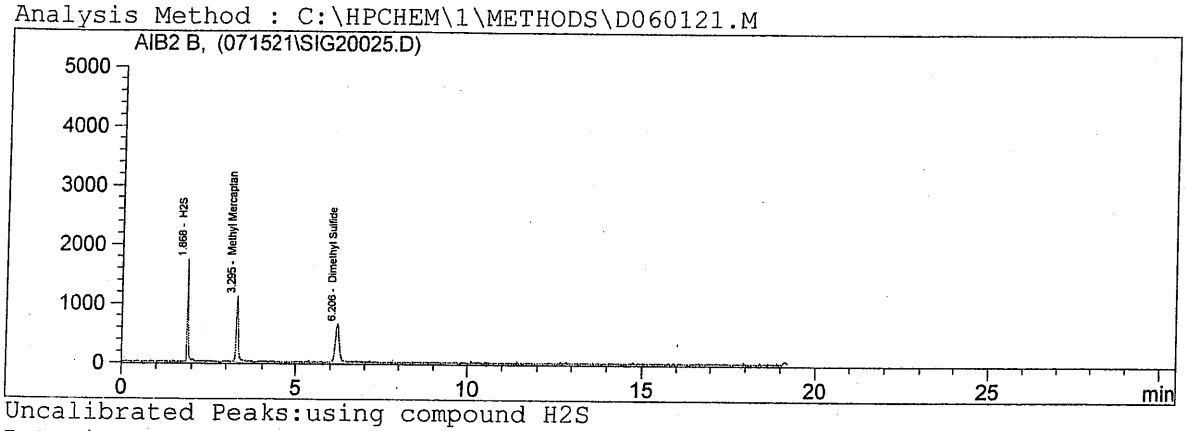
*** End of Report ***

2/16/21

Data File C:\HPCHEM\1\DATA\071521\SIG20025.D

Customized Report: D5504

Injection Date : 7/15/2021 3:58:35 PM Seq. Line :25
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.868	3774	557.330	H2S
0.000	0	0.000	COS / SO2
3.295	4467	532.694	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.206	4895	525.347	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1615.372	

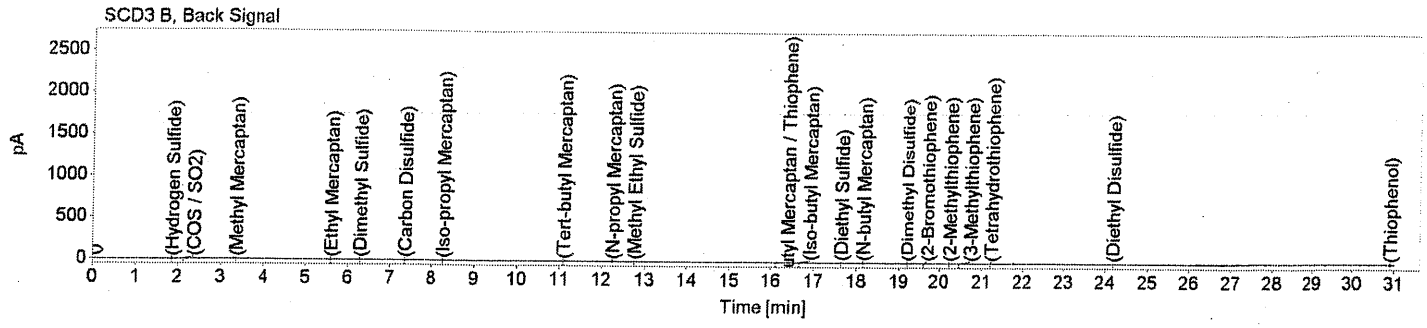
*** End of Report ***

7/15/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071521\001B0101.D
Injection date: 7/15/2021 5:34:05 AM
Sample name: System Blank
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

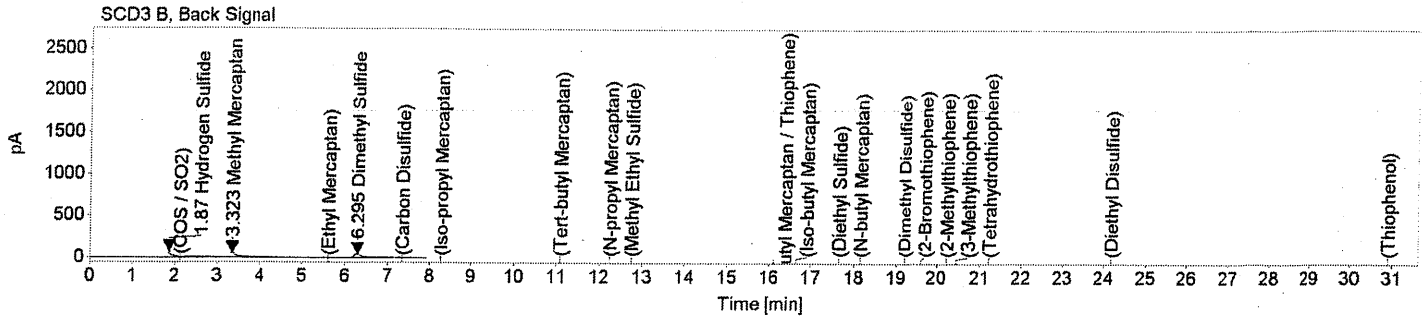
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

5/15/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071521\002B0201.D
Injection date: 7/15/2021 6:10:34 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

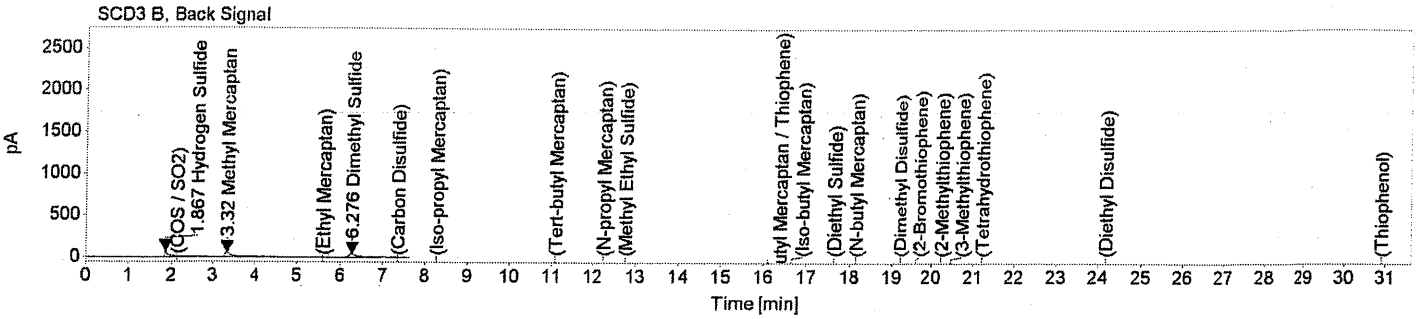
Description	SCD3 B, Back Signal		
RT [min]	Area	Amount [ppm]	Name
1.870	503.24	0.531	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.323	554.84	0.532	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.295	549.31	0.526	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.590	

7/15/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071521\003B0301.D
Injection date: 7/15/2021 6:21:09 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40) dp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

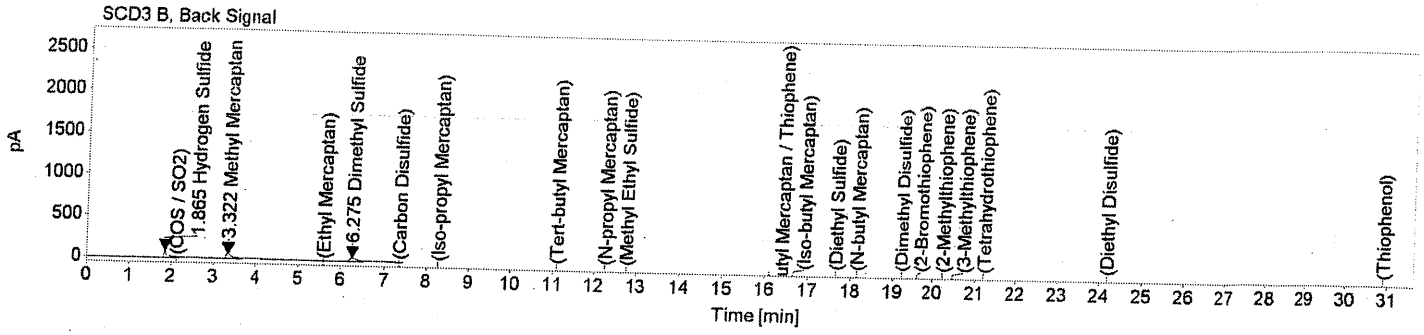
RT [min]	Area	Amount [ppm]	Name
1.867	503.88	0.532	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.320	545.45	0.523	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.276	562.21	0.538	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.594	

7/15/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071521\004B0401.D
Injection date: 7/15/2021 6:31:11 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40) tp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

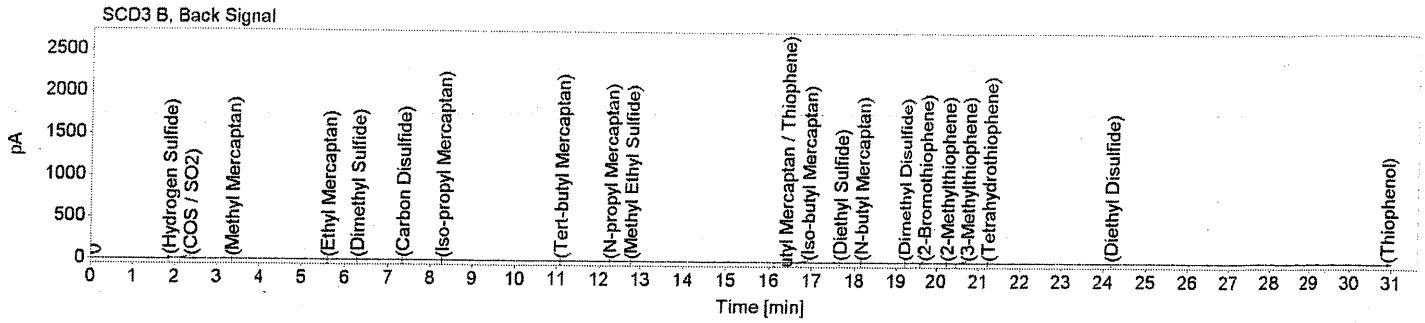
Description		SCD3 B, Back Signal	
RT [min]	Area	Amount [ppm]	Name
1.865	499.12	0.527	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.322	544.7	0.523	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.275	538.41	0.515	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.565	

7/15/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071521\005B0501.D
Injection date: 7/15/2021 6:41:11 AM
Sample name: rsk-175 blank
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

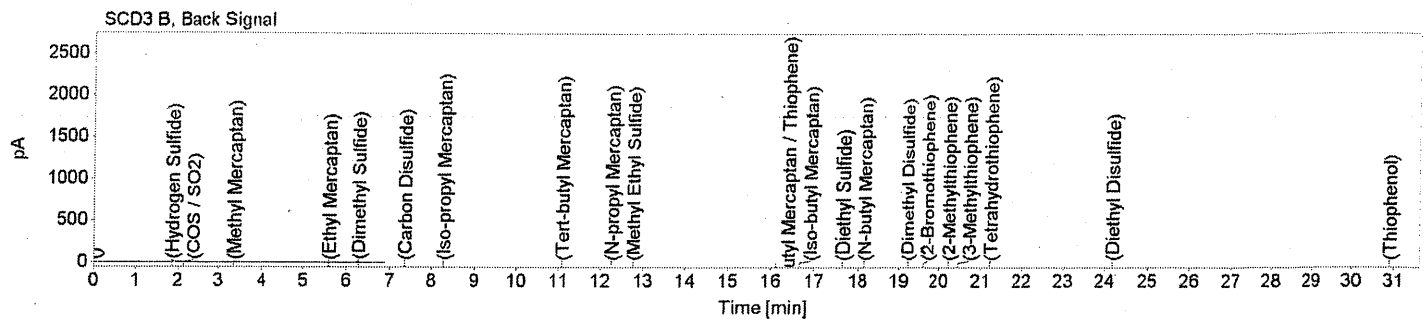
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

7/15/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071521\006B0601.D
Injection date: 7/15/2021 7:17:11 AM
Sample name: 211084-20480
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

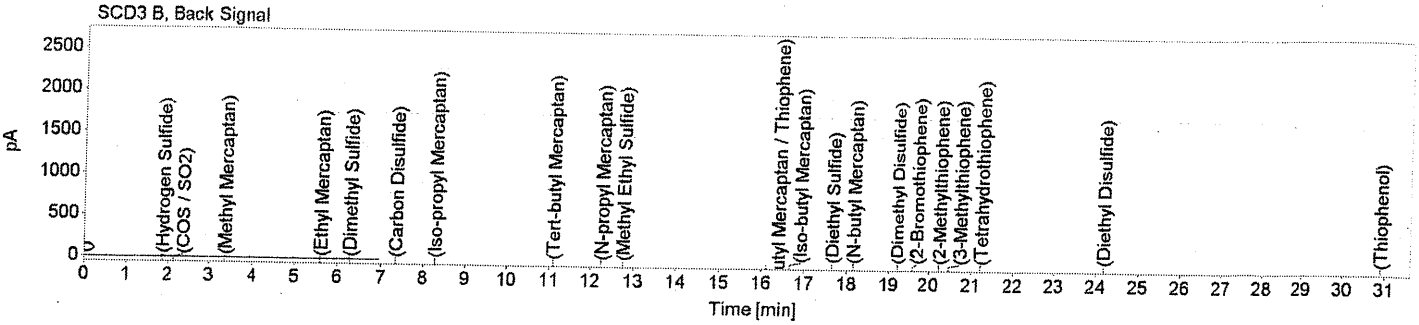
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

3/15/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071521\007B0701.D
Injection date: 7/15/2021 7:25:38 AM
Sample name: 211084-20480 dp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

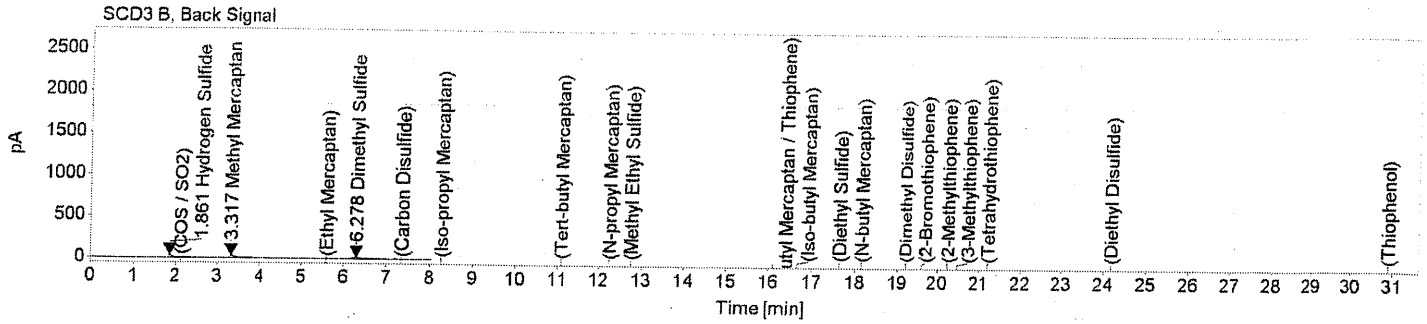
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

7/15/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071521\008B0801.D
Injection date: 7/15/2021 7:34:34 AM
Sample name: 211084-20480 MS (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



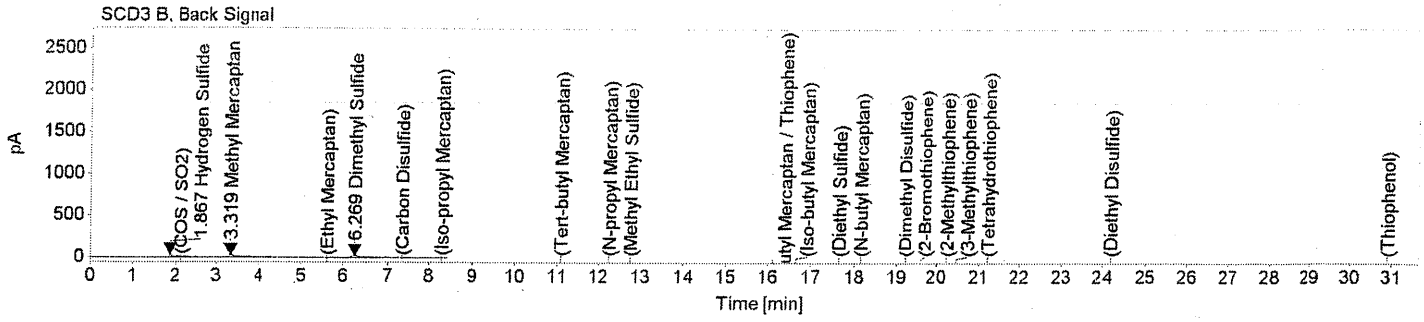
Uncalibrated Peaks: using H2S

Description	SCD3 B, Back Signal	
RT [min]	Area	Amount [ppm] Name
1.861	233.22	0.246 Hydrogen Sulfide
0.000	0	0.000 COS / SO2
3.317	252.63	0.242 Methyl Mercaptan
0.000	0	0.000 Ethyl Mercaptan
6.278	277.53	0.266 Dimethyl Sulfide
0.000	0	0.000 Carbon Disulfide
0.000	0	0.000 Iso-propyl Mercaptan
0.000	0	0.000 Tert-butyl Mercaptan
0.000	0	0.000 N-propyl Mercaptan
0.000	0	0.000 Methyl Ethyl Sulfide
0.000	0	0.000 Sec-butyl Mercaptan / Thiophene
0.000	0	0.000 Iso-butyl Mercaptan
0.000	0	0.000 Diethyl Sulfide
0.000	0	0.000 N-butyl Mercaptan
0.000	0	0.000 Dimethyl Disulfide
0.000	0	0.000 2-Bromothiophene
0.000	0	0.000 2-Methylthiophene
0.000	0	0.000 3-Methylthiophene
0.000	0	0.000 Tetrahydrothiophene
0.000	0	0.000 Diethyl Disulfide
0.000	0	0.000 Thiophenol
	Sum	0.754

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071521\009B0901.D
Injection date: 7/15/2021 7:46:24 AM
Sample name: 211084-20480 MSD (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

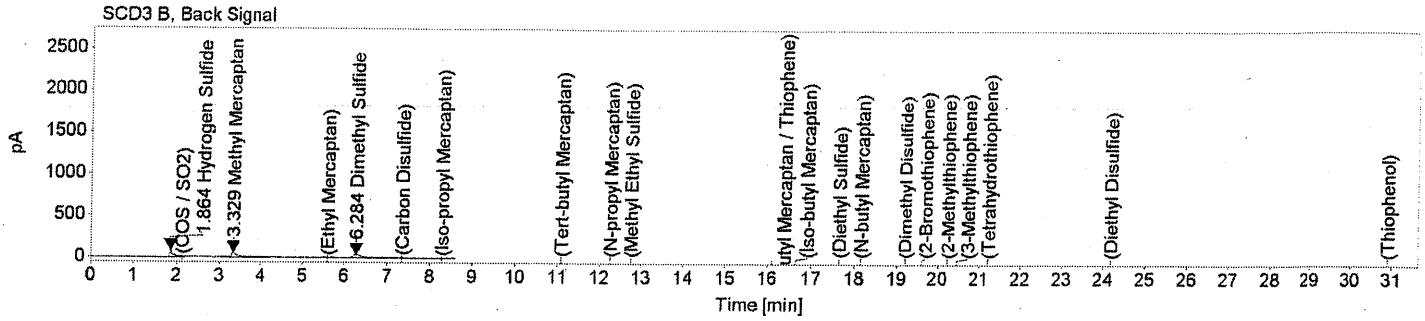
RT [min]	Area	Amount [ppm]	Name
1.867	235.31	0.248	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.319	260.53	0.250	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.269	278.48	0.266	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.765	

7/15/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071521\026B2601.D
Injection date: 7/15/2021 4:39:29 PM
Sample name: CCV 0.5 ppm H2S/MeSH/DMS (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

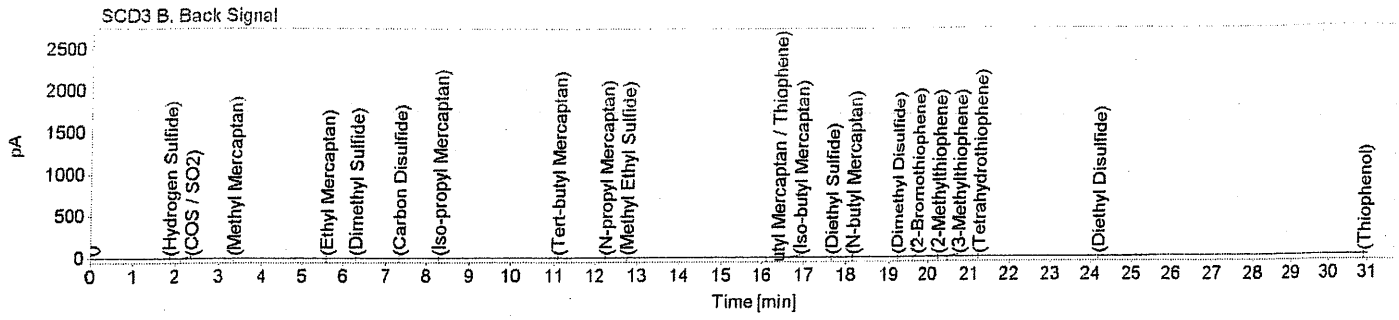
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.864	494.39	0.522	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.329	534.09	0.513	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.284	550.53	0.527	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.561	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071621\001B0101.D
Injection date: 7/16/2021 5:33:18 AM
Sample name: System Blank
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

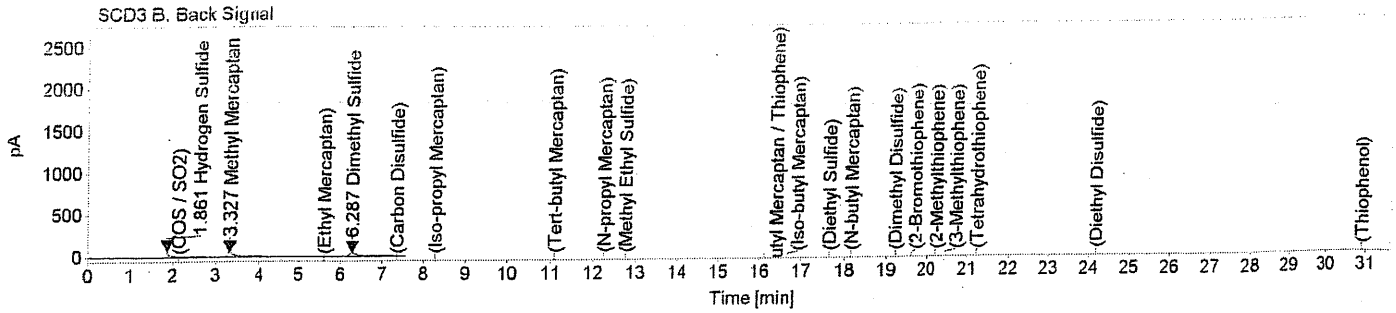
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071621\002B0201.D
Injection date: 7/16/2021 6:07:45 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

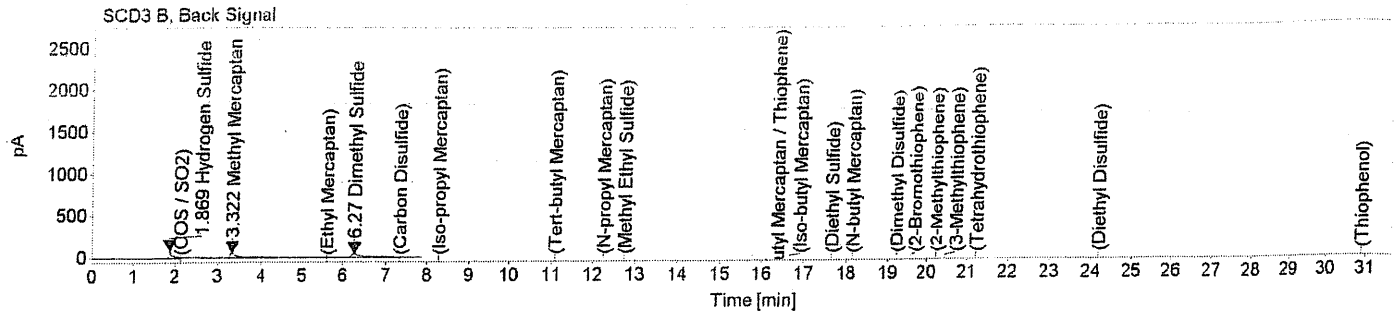
RT [min]	Area	Amount [ppm]	Name
1.861	479.46	0.506	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.327	548.21	0.526	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.287	560.84	0.537	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.569	

7/16/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071621\003B0301.D
Injection date: 7/16/2021 6:18:29 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40) dp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

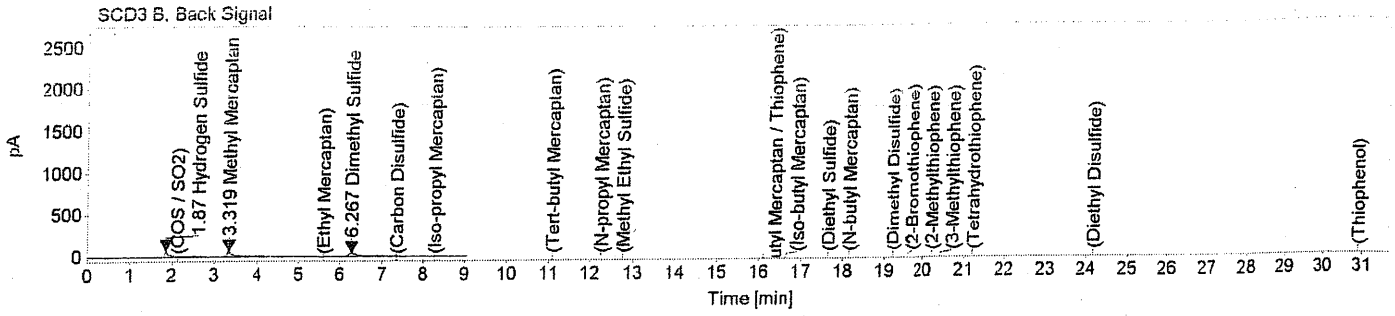
RT [min]	Area	Amount [ppm]	Name
1.869	497.41	0.525	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.322	539.85	0.518	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.270	540.17	0.517	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.560	

5/7/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071621\004B0401.D
Injection date: 7/16/2021 6:28:51 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40) tp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

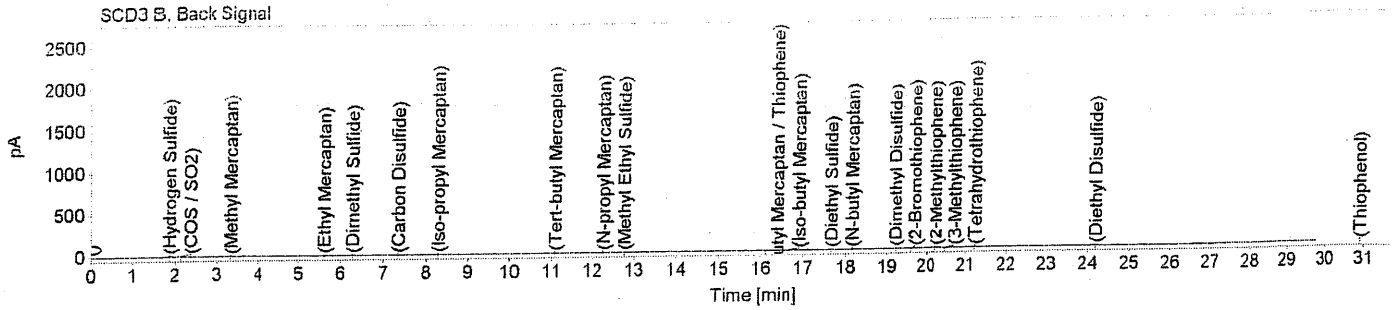
RT [min]	Area	Amount [ppm]	Name
1.870	502.07	0.530	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.319	544.47	0.523	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.267	541.03	0.518	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.570	

7/16/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071621\005B0501.D
Injection date: 7/16/2021 6:40:44 AM
Sample name: RSK-175 H2O BLANK
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

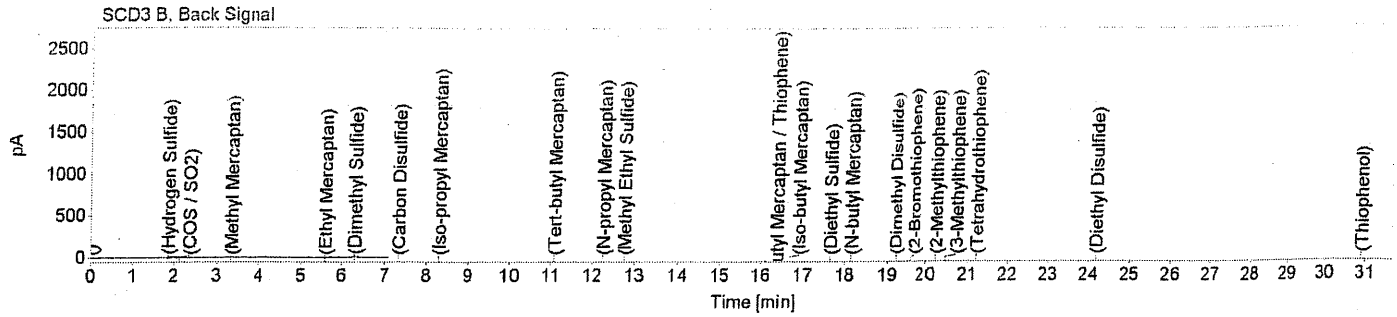
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

7/16/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071621\006B0601.D
Injection date: 7/16/2021 7:25:35 AM
Sample name: 211084-20480
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

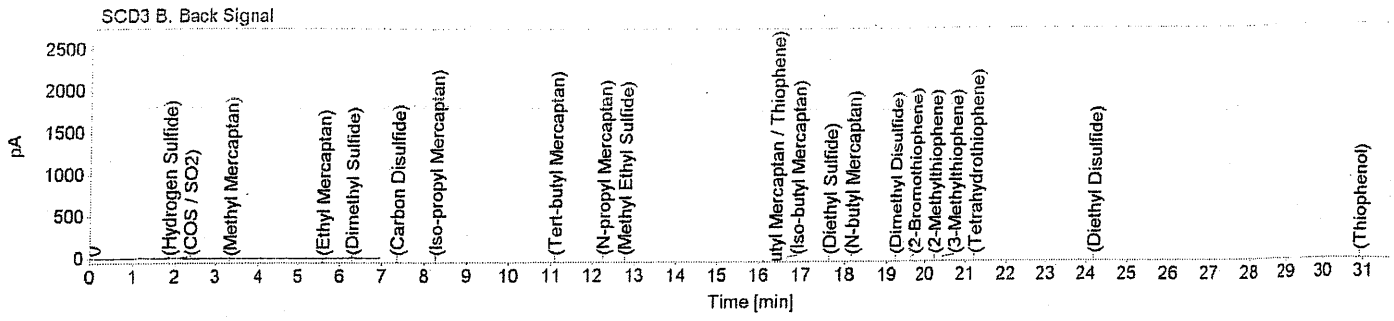
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

7/16/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071621\007B0701.D
Injection date: 7/16/2021 7:33:34 AM
Sample name: 211084-20480
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

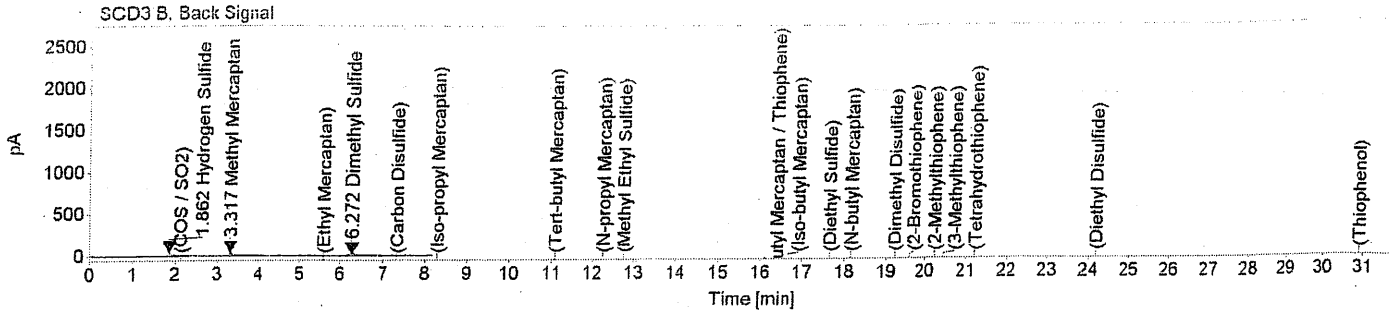
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

TRS Analysis

Atmospheric Analysis & Consulting, Inc.

Data file: C:\CHEM32OL\1\DATA\211084-20480 MS (SS1192 x40).D **Instrument:** GC-BTU
Injection date: 7/16/2021 7:42:50 AM **Acq. operator:** SYSTEM
Sample name: 211084-20480 MS (SS1192 x40) **Sample multiplier:** 1
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

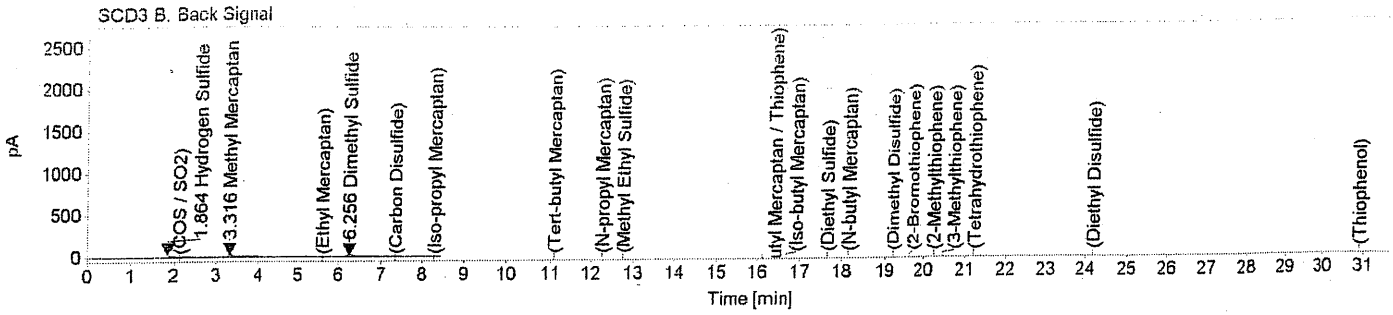
RT [min]	Area	Amount [ppm]	Name
1.862	236.28	0.250	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.317	261.19	0.251	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.272	259.7	0.248	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.749	

7/16/21

TRS Analysis

Atmospheric Analysis & Consulting, Inc.

Data file: C:\CHEM32OL\1\DATA\[illegible]\D [illegible] **Instrument:** GC-BTU
Injection date: 7/16/2021 ~~7:53:22 AM~~ **Acq. operator:** ~~SYSTEM~~
Sample name: 211084-20480 MSD (SS1192 x40) **Sample multiplier:** 1
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M



Uncalibrated Peaks: using H2S

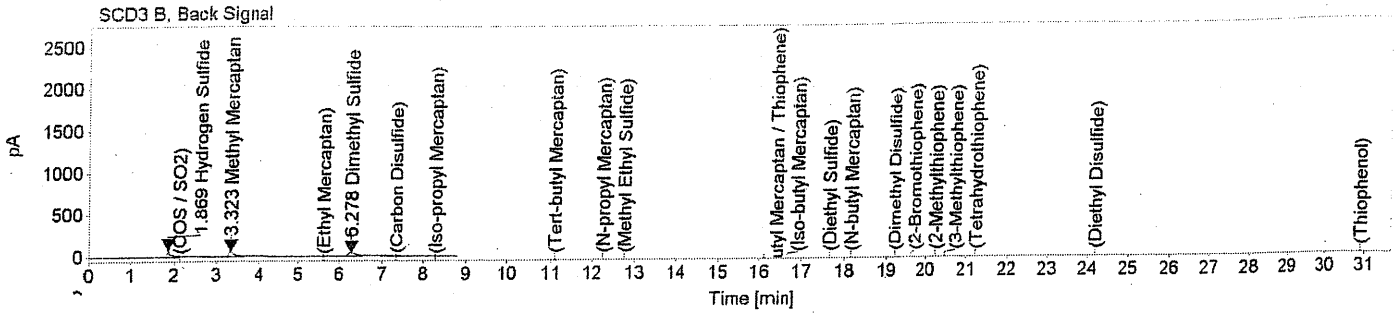
Description	SCD3 B, Back Signal	
RT [min]	Area	Amount [ppm] Name
1.864	240.52	0.254 Hydrogen Sulfide
0.000	0	0.000 COS / SO2
3.316	263.17	0.253 Methyl Mercaptan
0.000	0	0.000 Ethyl Mercaptan
6.256	276.65	0.265 Dimethyl Sulfide
0.000	0	0.000 Carbon Disulfide
0.000	0	0.000 Iso-propyl Mercaptan
0.000	0	0.000 Tert-butyl Mercaptan
0.000	0	0.000 N-propyl Mercaptan
0.000	0	0.000 Methyl Ethyl Sulfide
0.000	0	0.000 Sec-butyl Mercaptan / Thiophene
0.000	0	0.000 Iso-butyl Mercaptan
0.000	0	0.000 Diethyl Sulfide
0.000	0	0.000 N-butyl Mercaptan
0.000	0	0.000 Dimethyl Disulfide
0.000	0	0.000 2-Bromothiophene
0.000	0	0.000 2-Methylthiophene
0.000	0	0.000 3-Methylthiophene
0.000	0	0.000 Tetrahydrothiophene
0.000	0	0.000 Diethyl Disulfide
0.000	0	0.000 Thiophenol
	Sum	0.771

7/16/21

TRS Analysis

Atmospheric Analysis & Consulting, Inc.

Data file: C:\CHEM32OL\1\DATA\071621\28B280KD.D **Instrument:** GC-BTU
Injection date: 7/16/2021 4:38:54 PM **Acq. operator:** SYSTEM
Sample name: CCV 0.5 ppm H2S/MeSH/DMS (SS1192 x40) **Sample multiplier:** 1
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M



Uncalibrated Peaks: using H2S

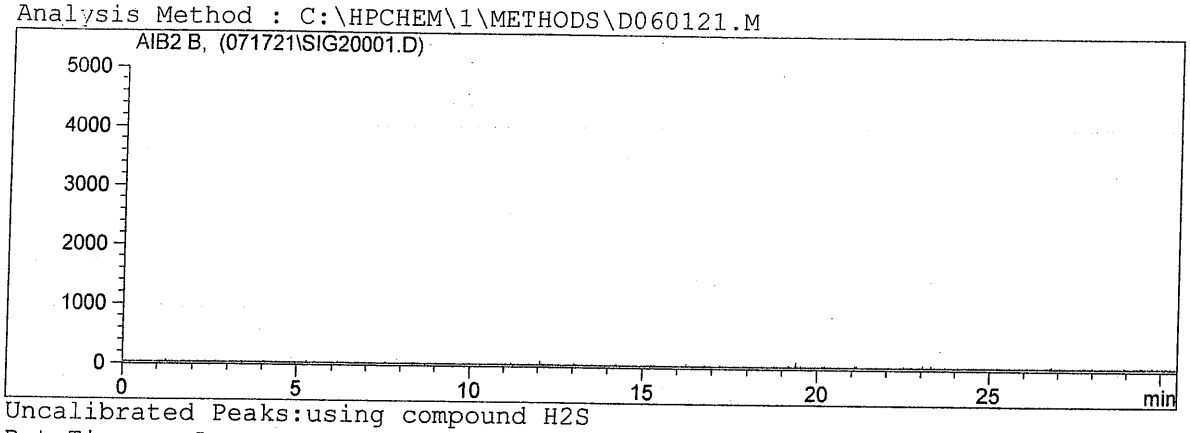
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.869	513.37	0.542	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.323	540.78	0.519	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.278	541.55	0.518	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.579	

Data File :C:\HPCHEM\1\DATA\071721\SIG20001.D

Customized Report: D5504

Injection Date : 7/17/2021 6:06:11 AM Seq. Line :1
Sample Name : System Blank
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

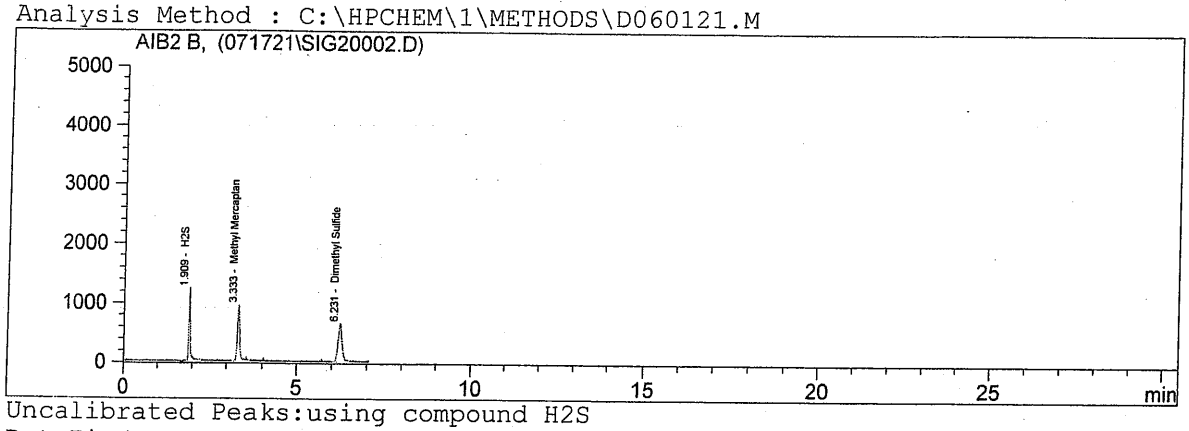
*** End of Report ***

7/17/21

Data File :C:\HPCHEM\1\DATA\071721\SIG20002.D

Customized Report: D5504

Injection Date : 7/17/2021 6:53:37 AM Seq. Line :2
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.909	3512	518.661	H2S
0.000	0	0.000	COS / SO2
3.333	4366	520.615	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.231	4878	523.487	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1562.764	

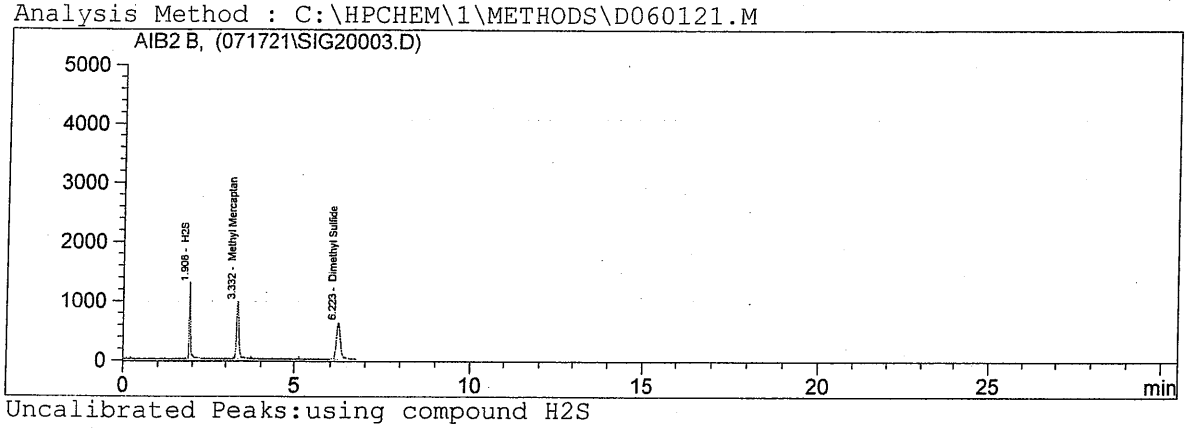
*** End of Report ***

7/19/21

Data file :C:\HPCHEM\1\DATA\071721\SIG20003.D

Customized Report: D5504

Injection Date : 7/17/2021 7:04:23 AM Seq. Line :3
Sample Name : CCV 500 ppbV dp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.908	3583	529.259	H2S
0.000	0	0.000	COS / SO2
3.332	4406	525.375	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.223	4917	527.641	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
		1582.274	Totals:

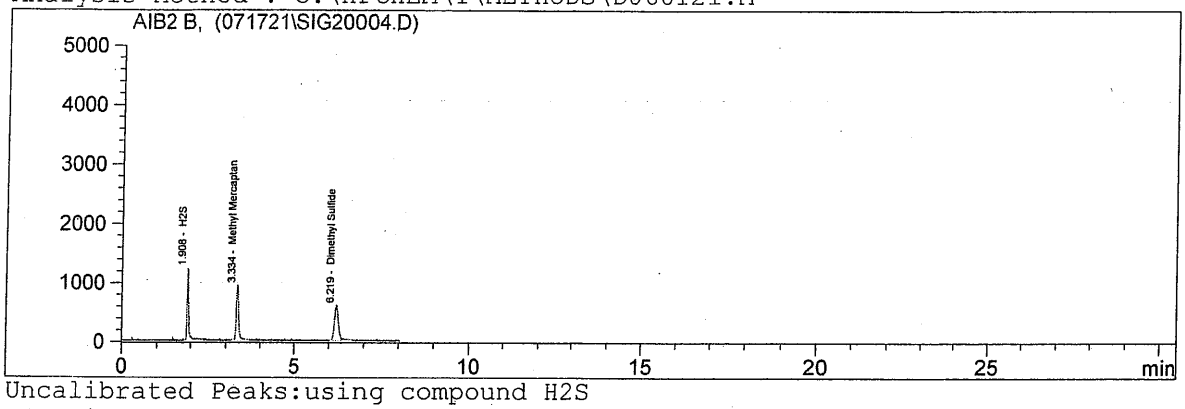
*** End of Report ***

7/17/21

Data file :C:\HPCHEM\1\DATA\071721\SIG20004.D

Customized Report: D5504

Injection Date : 7/17/2021 7:16:09 AM Seq. Line :4
Sample Name : CCV 500 ppbV tp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.908	3508	518.042	H2S
0.000	0	0.000	COS / SO2
3.334	4267	508.788	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.219	4749	509.584	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
		1536.415	Totals:

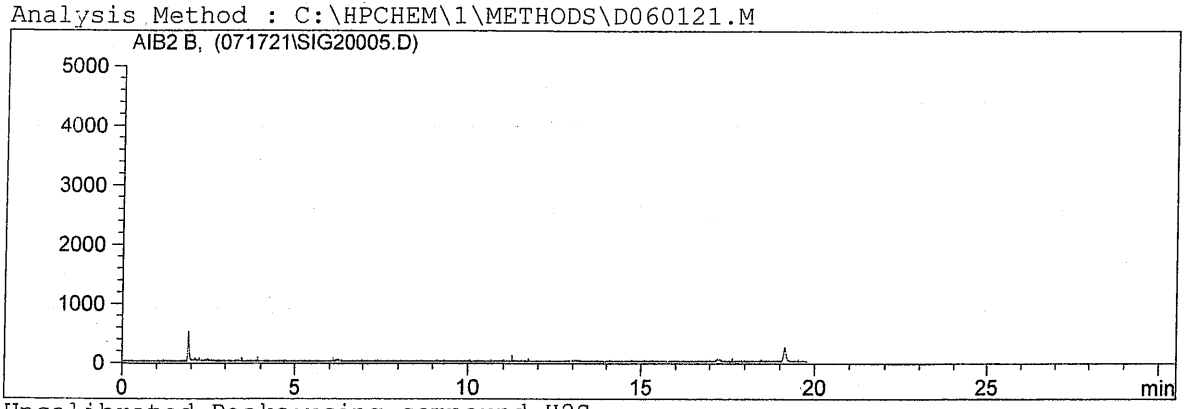
*** End of Report ***

7/17/21

Data File :C:\HPCHEM\1\DATA\071721\SIG20005.D

Customized Report: D5504

Injection Date : 7/17/2021 7:26:54 AM Seq. Line :5
Sample Name : RSK-175 H20 BK
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

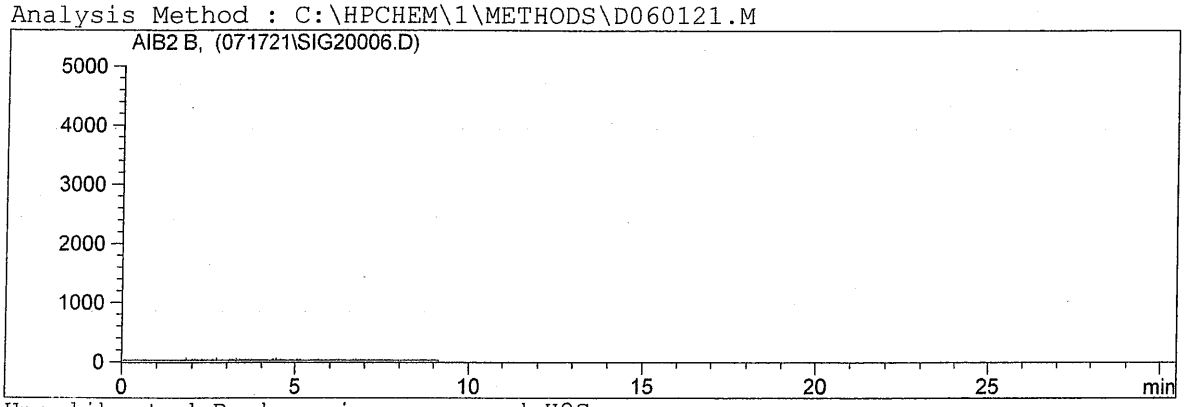
*** End of Report ***

7/17/21

Data File :C:\HPCHEM\1\DATA\071721\SIG20006.D

Customized Report: D5504

Injection Date : 7/17/2021 7:54:38 AM Seq. Line :6
Sample Name : 211084-20480 x5
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 5.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol

Totals:		0.000	

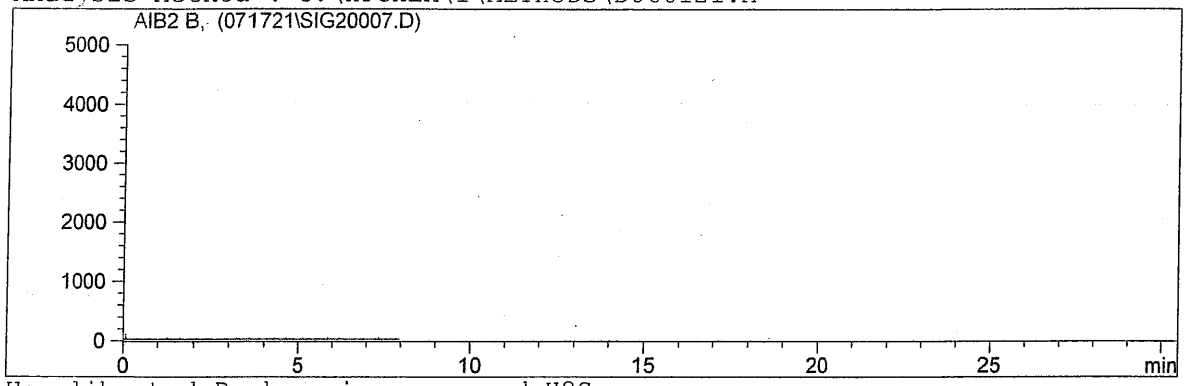
*** End of Report ***

7/17/21

Data file :C:\HPCHEM\1\DATA\071721\SIG20007.D

Customized Report: D5504

Injection Date : 7/17/2021 8:05:02 AM Seq. Line :7
Sample Name : 211084-20480 x5 dp
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

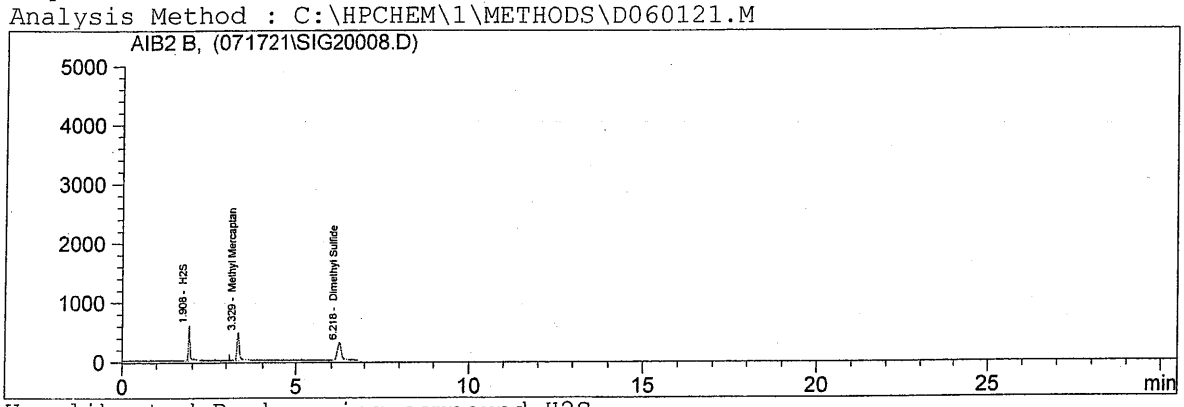
*** End of Report ***

7/17/21

Data file :C:\HPCHEM\1\DATA\071721\SIG20008.D

Customized Report: D5504

Injection Date : 7/17/2021 8:17:13 AM Seq. Line :8
Sample Name : 211084-20480 MS x10 H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.908	1716	253.491	H2S
0.000	0	0.000	COS / SO2
3.329	2090	249.191	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.218	2394	256.878	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		759.560	

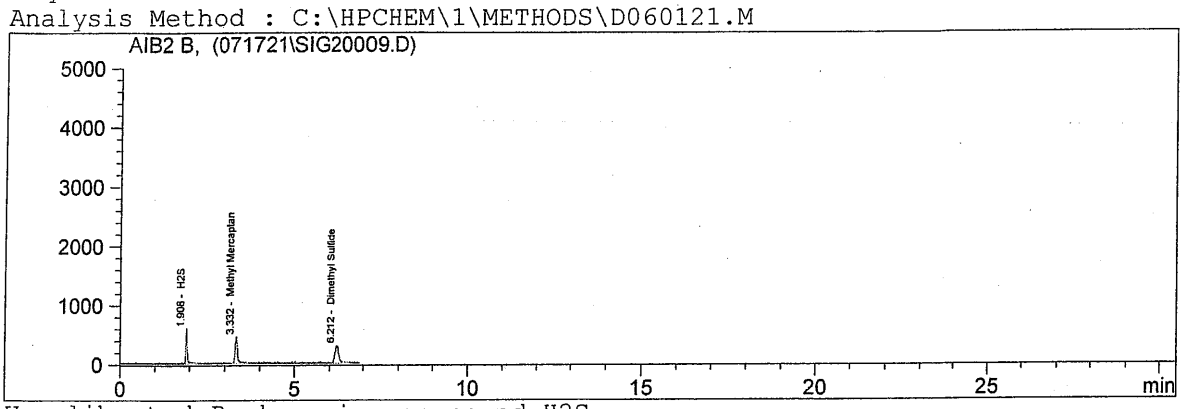
*** End of Report ***

7/17/21

Data file :C:\HPCHEM\1\DATA\071721\SIG20009.D

Customized Report: D5504

Injection Date : 7/17/2021 8:32:49 AM Seq. Line :9
Sample Name : 211084-20480 MSD x10 H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.908	1729	255.329	H2S
0.000	0	0.000	COS / SO2
3.332	2154	256.815	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.212	2493	267.566	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
		779.710	

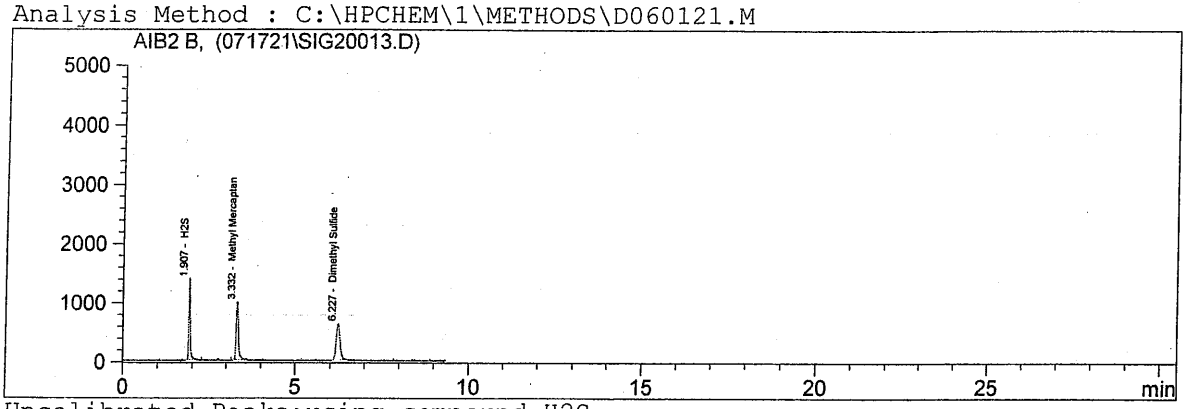
Totals:

*** End of Report ***

3/11/21

Customized Report: D5504

Injection Date : 7/17/2021 10:27:42 AM Seq. Line :13
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

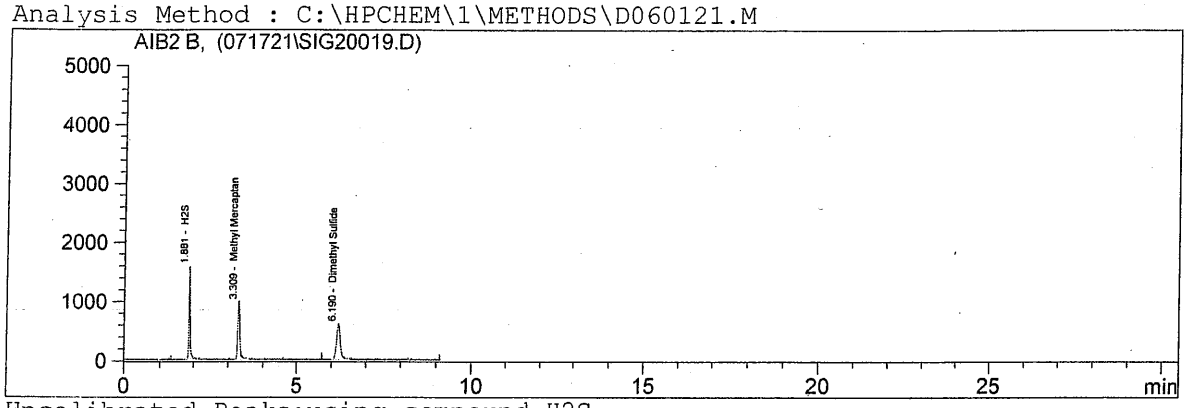
Ret Time [min]	Area	Amount [ppbV]	Name
1.907	3721	549.522	H2S
0.000	0	0.000	COS / SO2
3.332	4356	519.431	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.227	4829	518.229	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1587.182	

*** End of Report ***

Data File :C:\HPCHEM\1\DATA\071721\SIG20019.D

Customized Report: D5504

Injection Date : 7/17/2021 1:12:29 PM Seq. Line :19
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

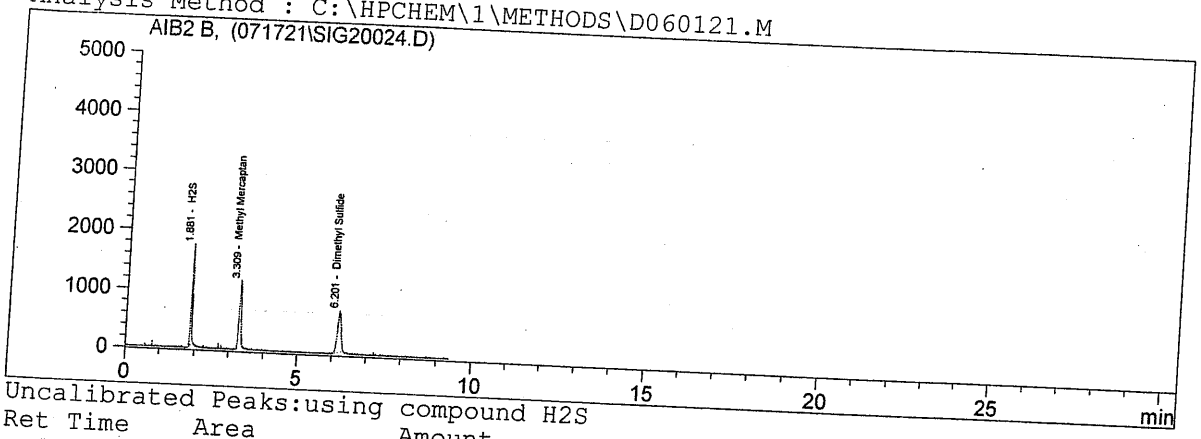
Ret Time [min]	Area	Amount [ppbV]	Name
1.881	3695	545.777	H2S
0.000	0	0.000	COS / SO2
3.309	4266	508.703	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.190	4737	508.301	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1562.781	

*** End of Report ***

7/17/21

Customized Report: D5504

Injection Date : 7/17/2021 3:26:00 PM
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40) Seq. Line :24
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.881	3719	549.349	H2S
0.000	0	0.000	COS / SO2
3.309	4310	513.922	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.201	5003	536.846	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1600.117	

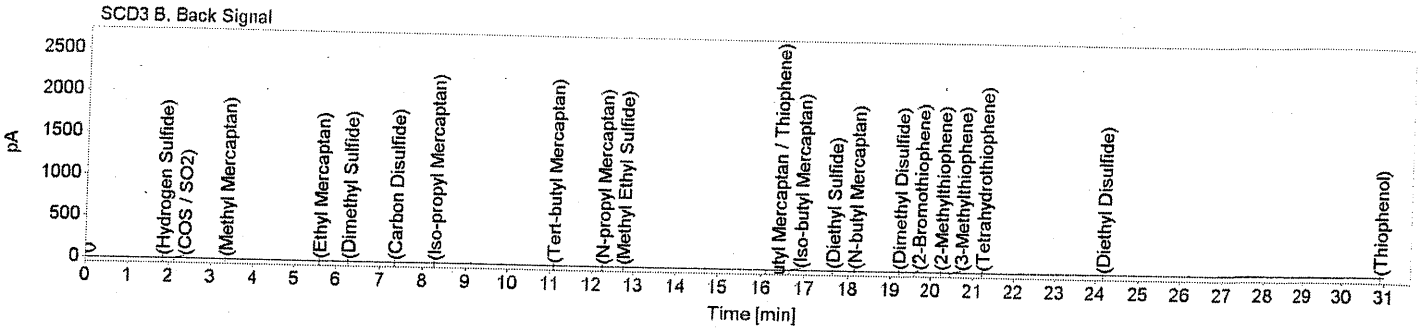
*** End of Report ***

7/17/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071721\001B0101.D
Injection date: 7/17/2021 6:05:49 AM
Sample name: System Blank
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

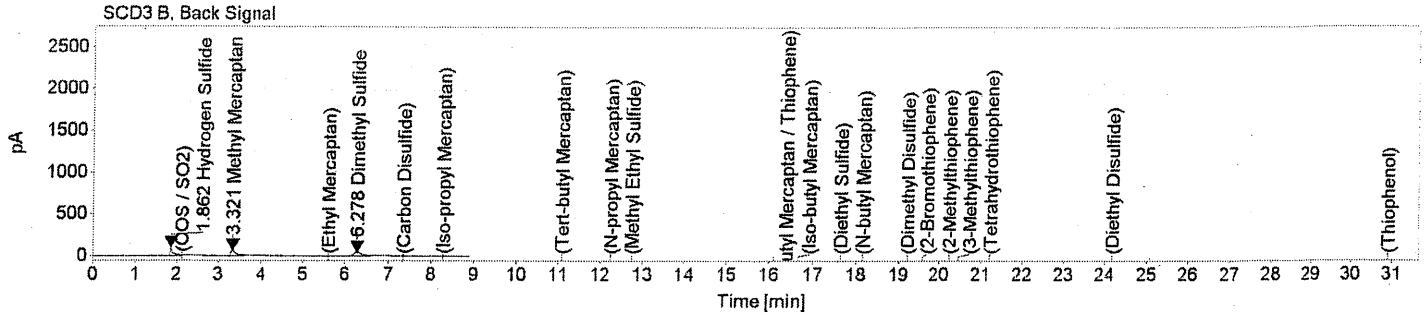
Description		SCD3 B, Back Signal
RT [min]	Area	Amount [ppm] Name
0.000	0	0.000 Hydrogen Sulfide
0.000	0	0.000 COS / SO2
0.000	0	0.000 Methyl Mercaptan
0.000	0	0.000 Ethyl Mercaptan
0.000	0	0.000 Dimethyl Sulfide
0.000	0	0.000 Carbon Disulfide
0.000	0	0.000 Iso-propyl Mercaptan
0.000	0	0.000 Tert-butyl Mercaptan
0.000	0	0.000 N-propyl Mercaptan
0.000	0	0.000 Methyl Ethyl Sulfide
0.000	0	0.000 Sec-butyl Mercaptan / Thiophene
0.000	0	0.000 Iso-butyl Mercaptan
0.000	0	0.000 Diethyl Sulfide
0.000	0	0.000 N-butyl Mercaptan
0.000	0	0.000 Dimethyl Disulfide
0.000	0	0.000 2-Bromothiophene
0.000	0	0.000 2-Methylthiophene
0.000	0	0.000 3-Methylthiophene
0.000	0	0.000 Tetrahydrothiophene
0.000	0	0.000 Diethyl Disulfide
0.000	0	0.000 Thiophenol
	Sum	0.000

7/17/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071721\002B0201.D
Injection date: 7/17/2021 6:42:22 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

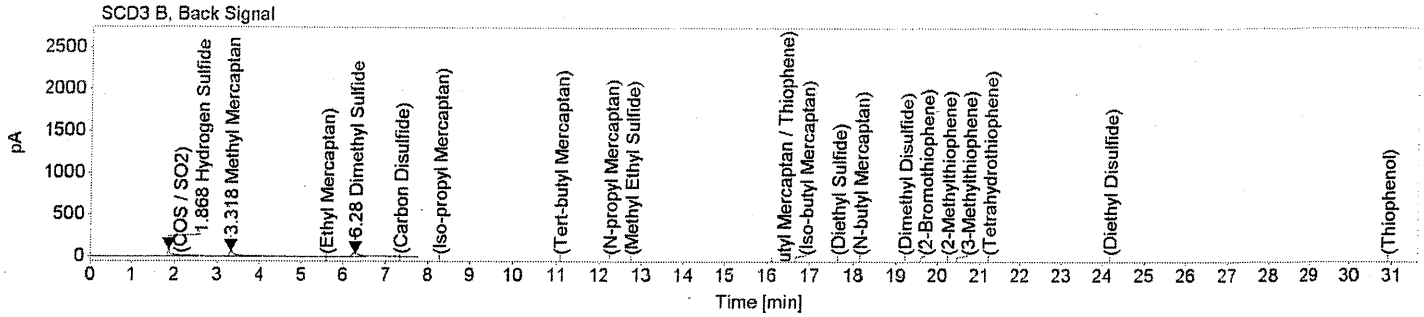
RT [min]	Area	Amount [ppm]	Name
1.862	512.43	0.541	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.321	552.05	0.530	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.278	553.42	0.530	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.601	

7/17/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071721\003B0301.D
Injection date: 7/17/2021 6:53:21 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40) dp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

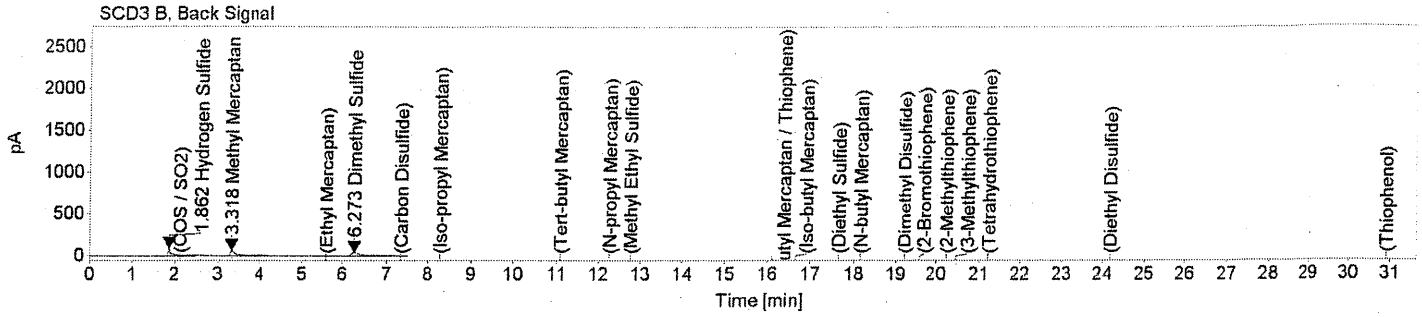
RT [min]	Area	Amount [ppm]	Name
1.868	499.84	0.528	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.318	544.67	0.523	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.280	543.52	0.520	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.571	

7/19/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071721\004B0401.D
Injection date: 7/17/2021 7:04:07 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40) tp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

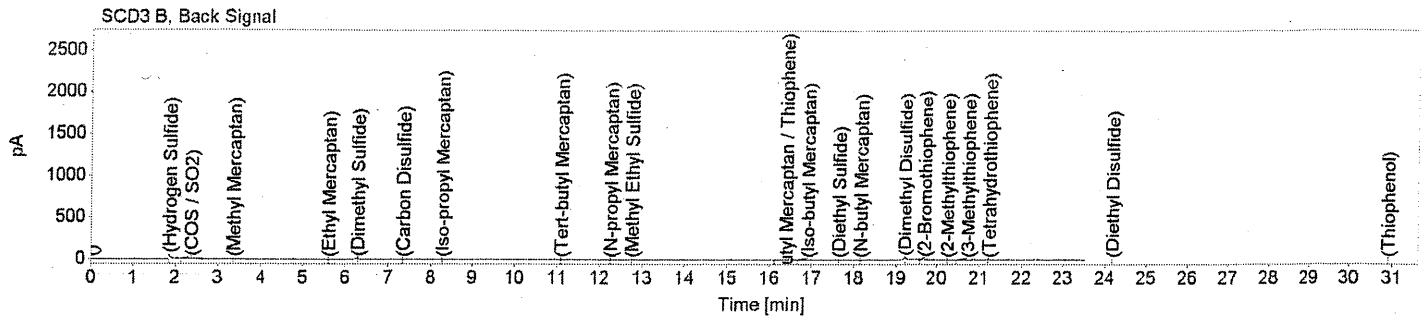
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.862	495.26	0.523	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.318	553.45	0.531	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.273	543.98	0.521	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.575	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071721\005B0501.D
Injection date: 7/17/2021 7:18:42 AM
Sample name: RSK-175 H20 BLANK
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

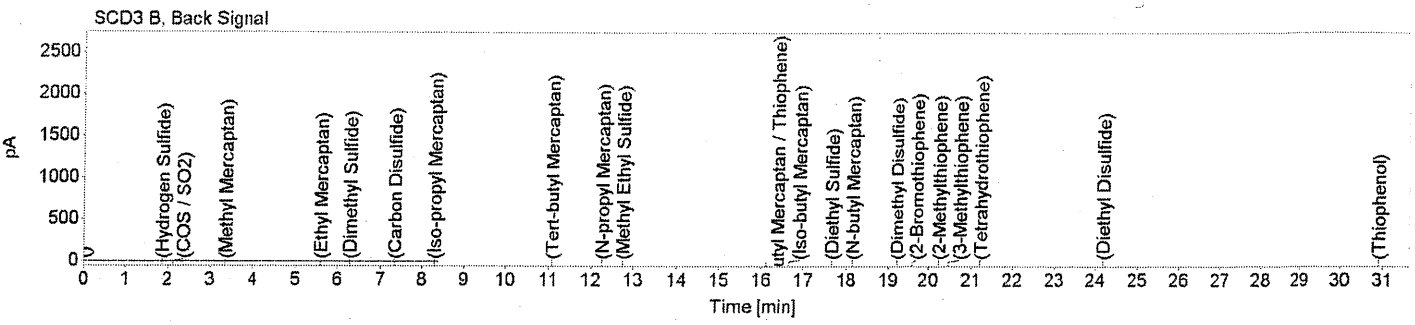
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

7/16/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071721\006B0601.D
Injection date: 7/17/2021 7:45:14 AM
Sample name: 211084-20479 X5
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

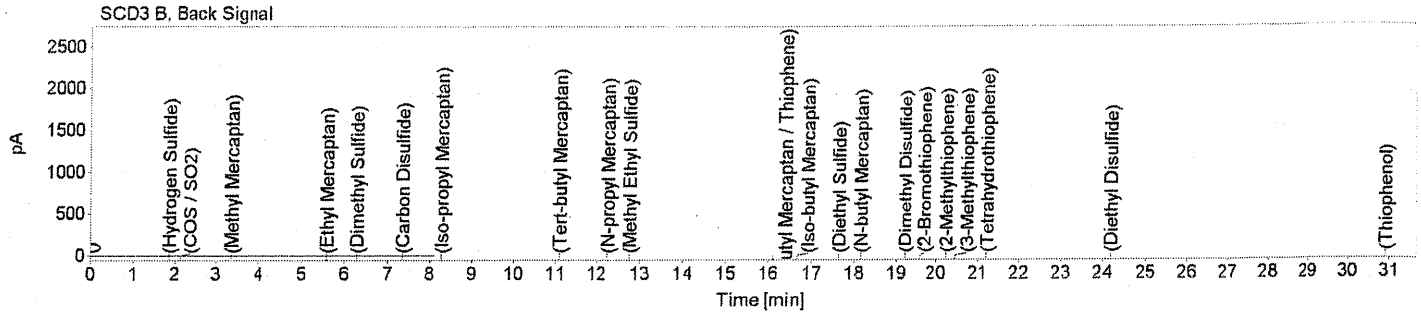
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

7/19/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071721\007B0701.D
Injection date: 7/17/2021 7:54:20 AM
Sample name: 211084-20479 X5 DP
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

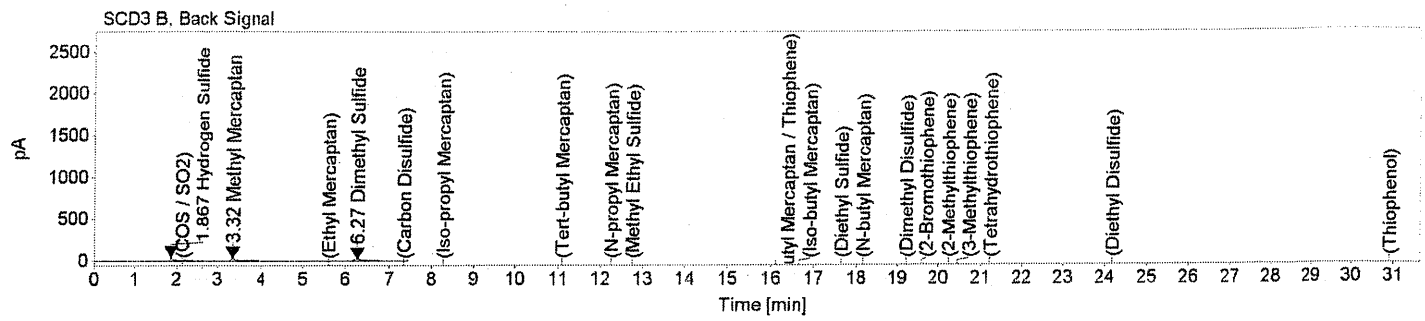
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

5/10/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071721\008B0801.D
Injection date: 7/17/2021 8:07:04 AM
Sample name: 211084-20479 MS (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

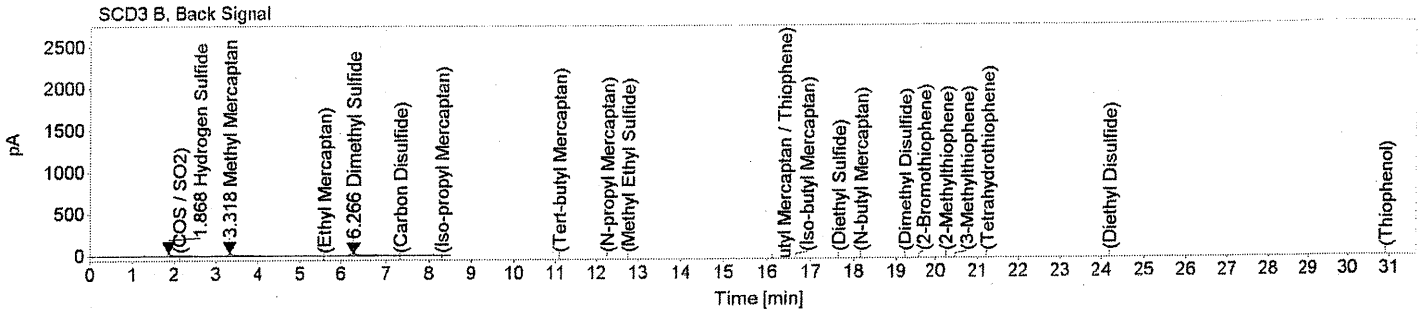
RT [min]	Area	Amount [ppm]	Name
1.867	258.55	0.273	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.320	276.47	0.265	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.270	266.18	0.255	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.793	

11/10/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071721\009B0901.D
Injection date: 7/17/2021 8:16:48 AM
Sample name: 211084-20479 MSD (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

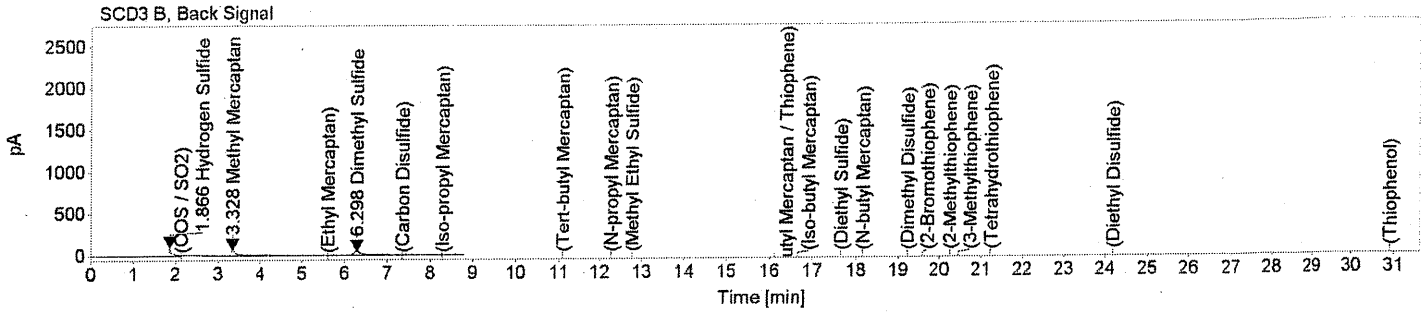
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.868	247.34	0.261	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.318	267.4	0.257	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.266	271.75	0.260	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.778	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071721\023B2301.D
Injection date: 7/17/2021 3:21:30 PM
Sample name: CCV 0.5 ppm H2S/MeSH/DMS (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

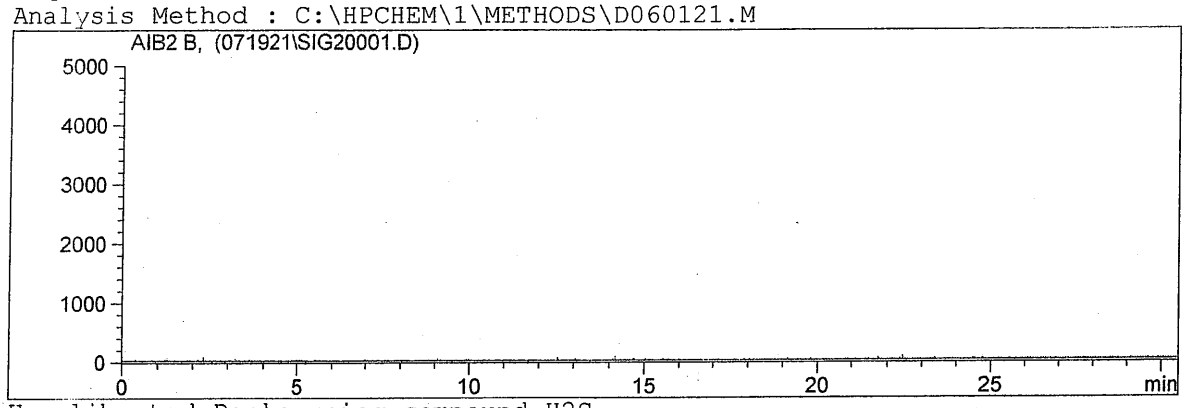
RT [min]	Area	Amount [ppm]	Name
1.866	503.57	0.532	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.328	549.82	0.528	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.298	560.03	0.536	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.595	

7/16/21

Data File :C:\HPCHEM\1\DATA\071921\SIG20001.D

Customized Report: D5504

Injection Date : 7/19/2021 5:34:34 AM Seq. Line :1
Sample Name : System Blank
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

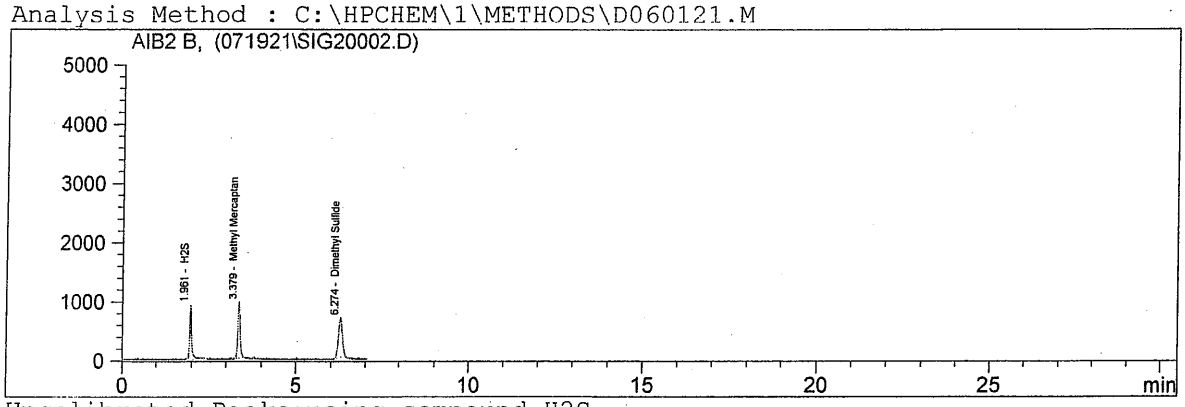
*** End of Report ***

7/19/21

Data file :C:\HPCHEM\1\DATA\071921\SIG20002.D

Customized Report: D5504

Injection Date : 7/19/2021 6:20:57 AM Seq. Line :2
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.961	3647	538.687	H2S
0.000	0	0.000	COS / SO2
3.379	4457	531.478	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.274	5000	536.548	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
		1606.713	Totals:

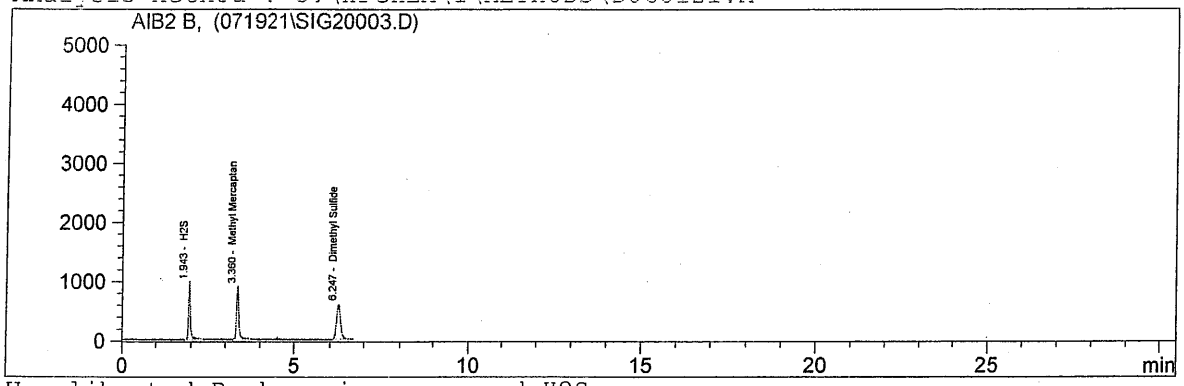
*** End of Report ***

8/19/21

Data file :C:\HPCHEM\1\DATA\071921\SIG20003.D

Customized Report: D5504

Injection Date : 7/19/2021 6:31:31 AM Seq. Line :3
Sample Name : CCV 500 ppbV dp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

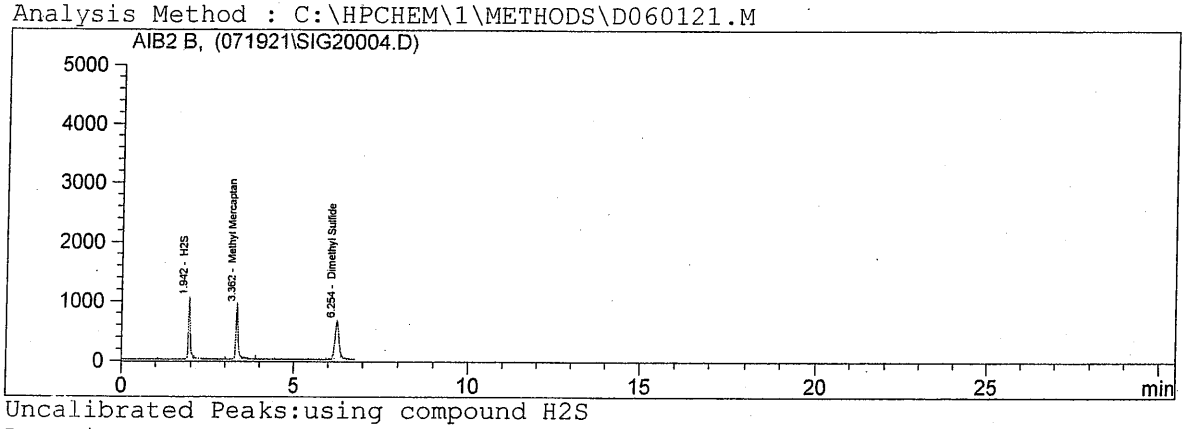
Ret Time [min]	Area	Amount [ppbV]	Name
1.943	3488	515.223	H2S
0.000	0	0.000	COS / SO2
3.360	4406	525.364	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.247	4833	518.642	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1559.228	

*** End of Report ***

7/19/21

Customized Report: D5504

Injection Date : 7/19/2021 6:39:51 AM Seq. Line :4
Sample Name : CCV 500 ppbV tp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.942	3525	520.690	H2S
0.000	0	0.000	COS / SO2
3.362	4500	536.590	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.254	4833	518.651	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1575.931	

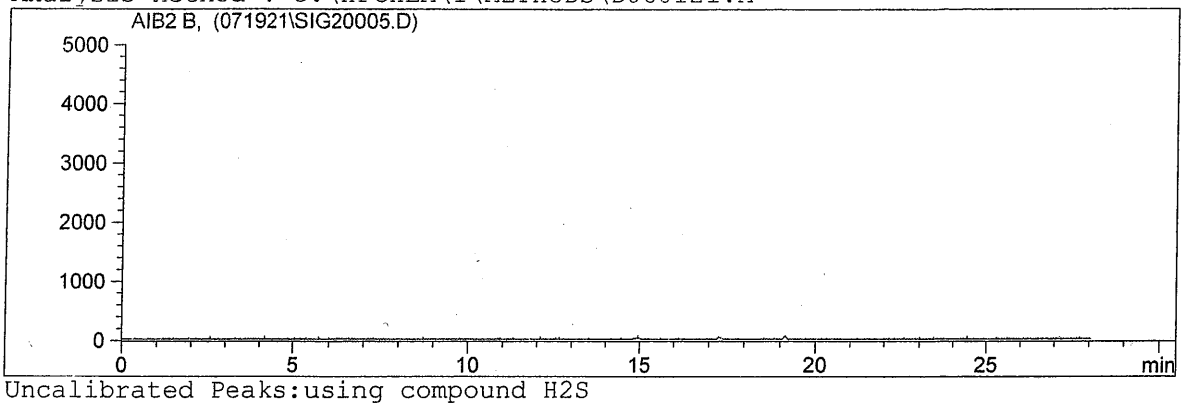
*** End of Report ***

7/19/21

Data file :C:\HPCHEM\1\DATA\071921\SIG20005.D

Customized Report: D5504

Injection Date : 7/19/2021 6:50:17 AM Seq. Line :5
Sample Name : RSK-175 H20 BK
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

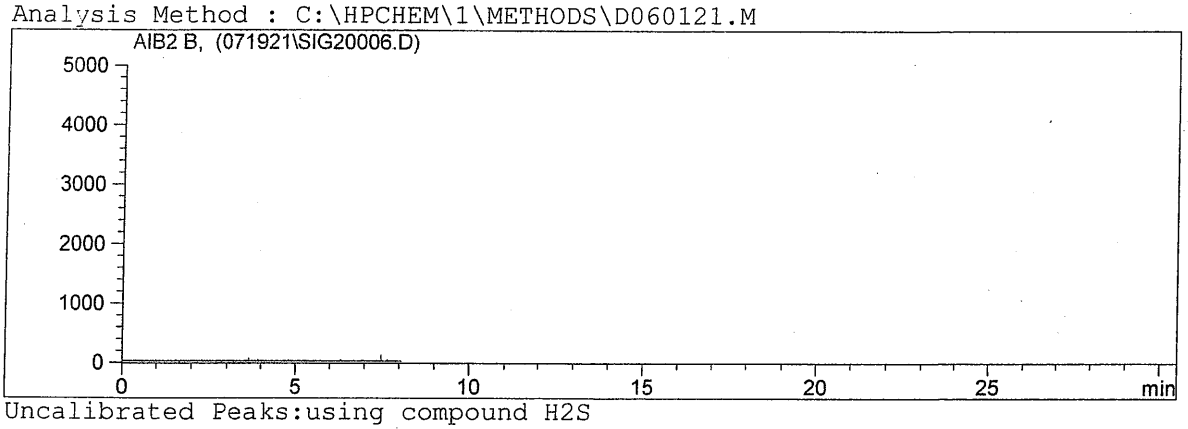
Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\071921\SIG20006.D

Customized Report: D5504

Injection Date : 7/19/2021 7:23:00 AM Seq. Line :6
Sample Name : 211084-20480 x5
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 5.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

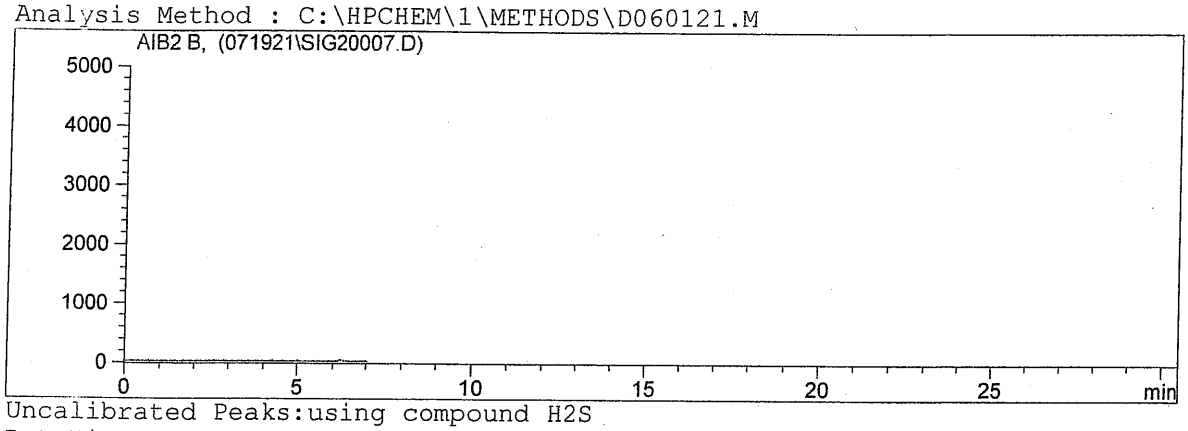
Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

*** End of Report ***

Data File :C:\HPCHEM\1\DATA\071921\SIG20007.D

Customized Report: D5504

Injection Date : 7/19/2021 7:33:37 AM Seq. Line :7
Sample Name : 211084-20480 x5 dp
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

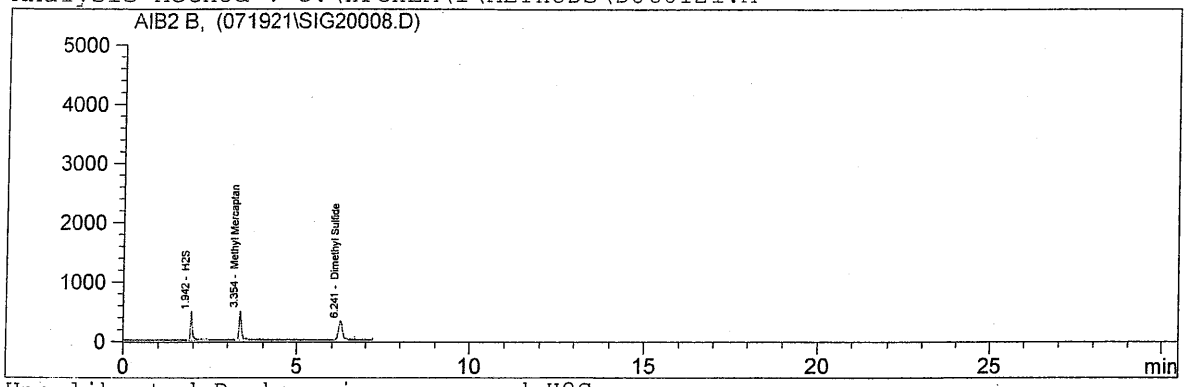
Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\071921\SIG20008.D

Customized Report: D5504

Injection Date : 7/19/2021 7:43:24 AM Seq. Line :8
Sample Name : 211084-20480 MS x10 H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.942	1716	253.435	H2S
0.000	0	0.000	COS / SO2
3.354	2196	261.890	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.241	2534	271.967	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		787.292	

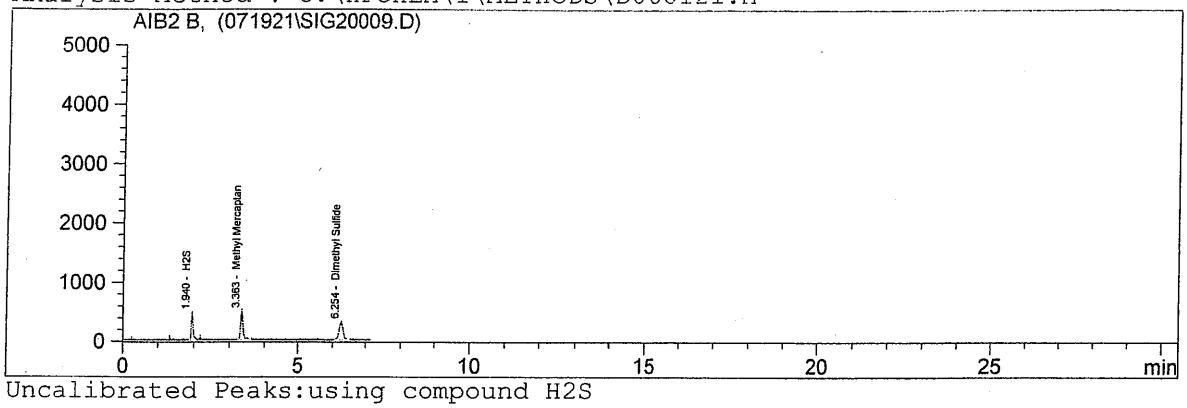
*** End of Report ***

7/19/21

Data file :C:\HPCHEM\1\DATA\071921\SIG20009.D

Customized Report: D5504

Injection Date : 7/19/2021 7:53:36 AM Seq. Line :9
Sample Name : 211084-20480 MSD x10 H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

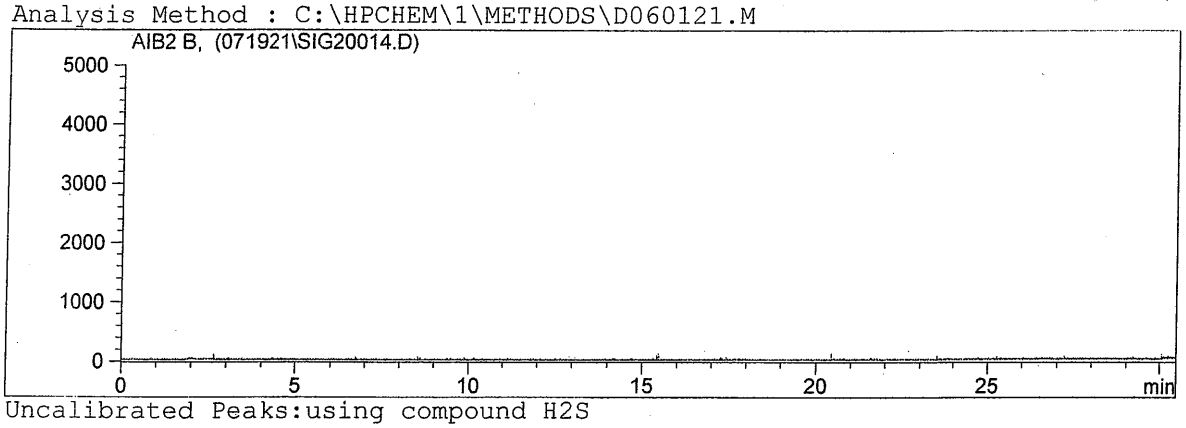
Ret Time [min]	Area	Amount [ppbV]	Name
1.940	1764	260.562	H2S
0.000	0	0.000	COS / SO2
3.363	2223	265.046	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.254	2419	259.623	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		785.232	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\071921\SIG20014.D

Customized Report: D5504

Injection Date : 7/19/2021 9:56:20 AM Seq. Line :14
Sample Name : Method Blank
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

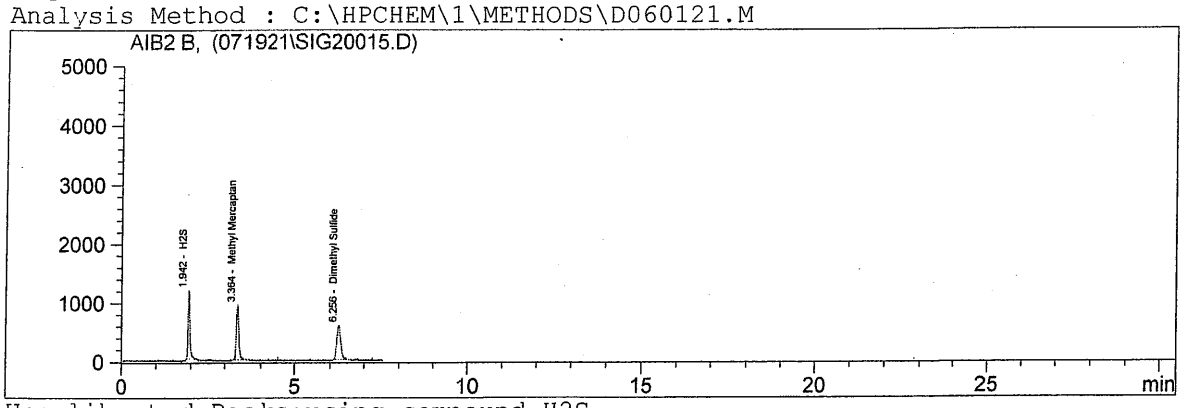
*** End of Report ***

7/19/21

Data file :C:\HPCHEM\1\DATA\071921\SIG20015.D

Customized Report: D5504

Injection Date : 7/19/2021 10:32:36 AM Seq. Line :15
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.942	3688	544.755	H2S
0.000	0	0.000	COS / SO2
3.364	4352	518.917	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.256	4676	501.852	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1565.524	

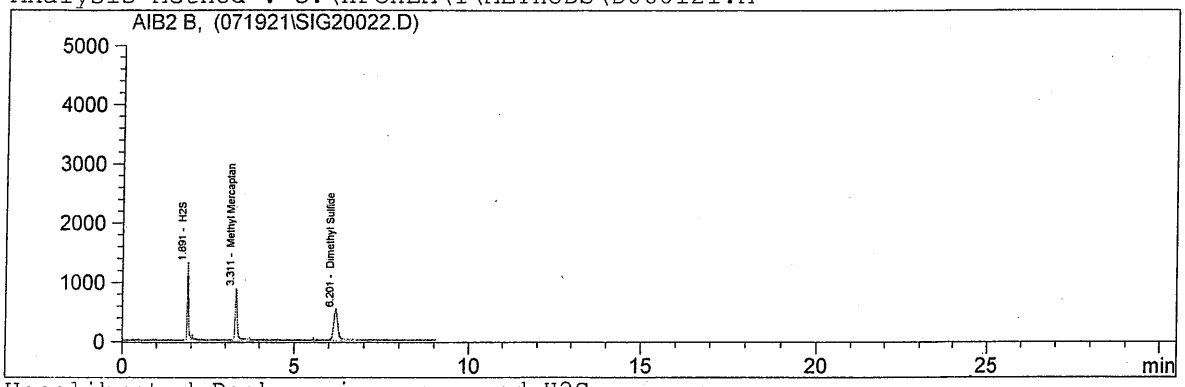
*** End of Report ***

7/19/21

Data file :C:\HPCHEM\1\DATA\071921\SIG20022.D

Customized Report: D5504

Injection Date : 7/19/2021 2:17:40 PM Seq. Line :22
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

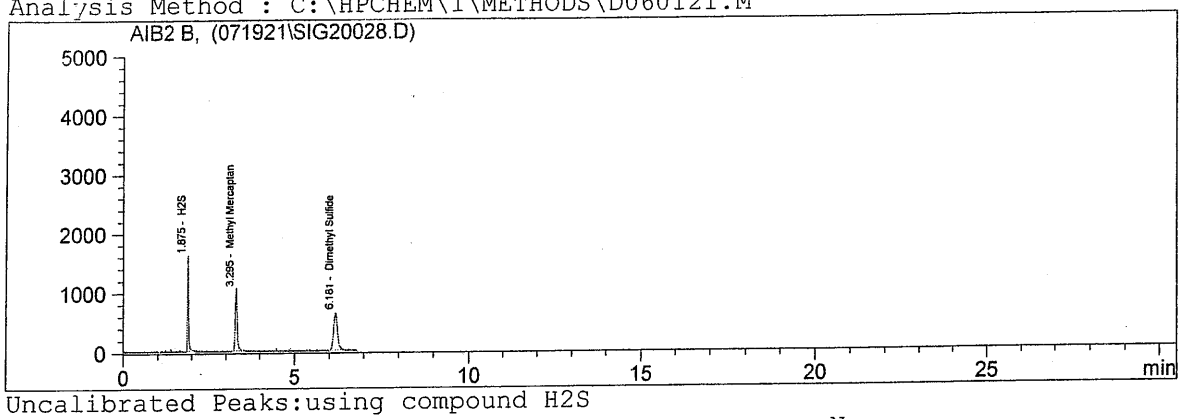
Ret Time [min]	Area	Amount [ppbV]	Name
1.891	3471	512.600	H2S
0.000	0	0.000	COS / SO2
3.311	4074	485.822	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.201	4515	484.490	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1482.913	

*** End of Report ***

7/19/21

Customized Report: D5504

Injection Date : 7/19/2021 4:21:54 PM Seq. Line :28
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

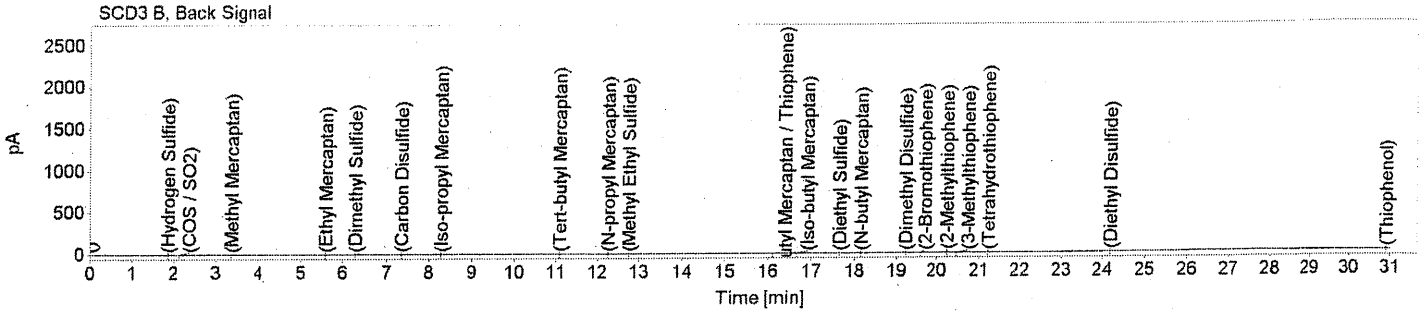
Ret Time [min]	Area	Amount [ppbV]	Name
1.875	3686	544.388	H2S
0.000	0	0.000	COS / SO2
3.295	4299	512.614	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.181	4736	508.231	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1565.233	

*** End of Report ***

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071921\001B0101.D
Injection date: 7/19/2021 5:34:47 AM
Sample name: System Blank
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

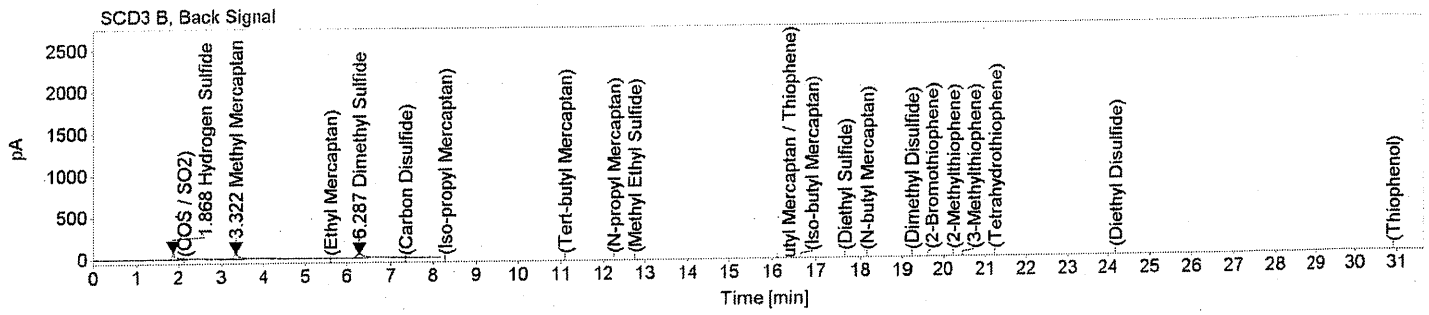
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

7/19/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071921\002B0201.D
Injection date: 7/19/2021 6:10:03 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

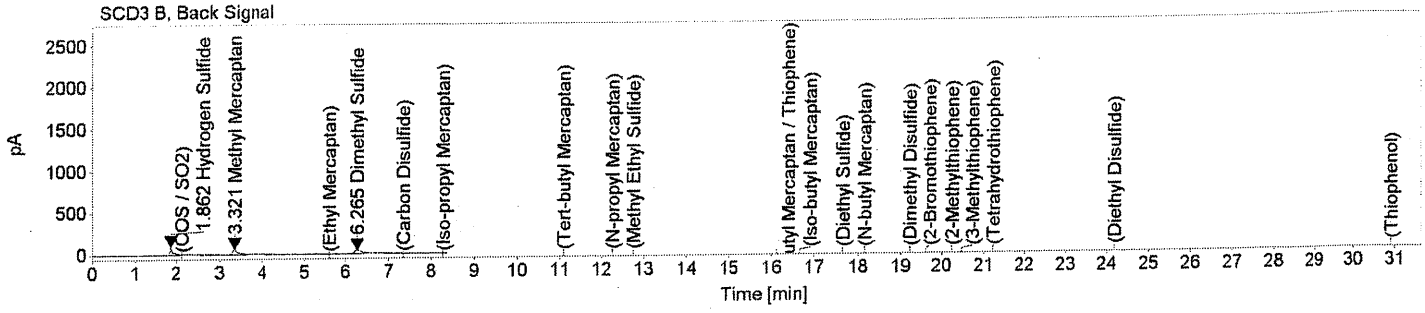
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.868	512.28	0.541	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.322	528.96	0.508	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.287	540.51	0.517	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.566	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071921\003B0301.D
Injection date: 7/19/2021 6:20:42 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40) dp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

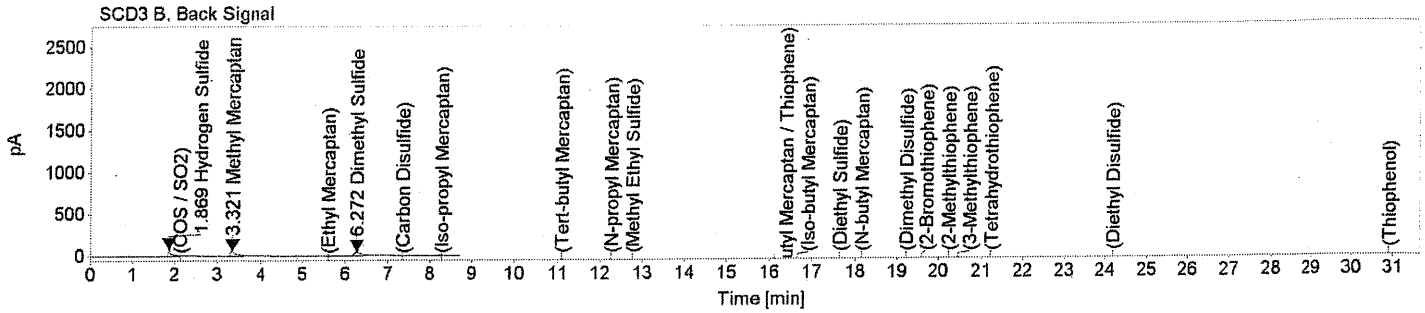
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.862	496.4	0.524	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.321	542.39	0.521	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.265	523.77	0.501	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.546	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071921\004B0401.D
Injection date: 7/19/2021 6:31:15 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40) tp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.869	499.51	0.527	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.321	543.99	0.522	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.272	535.88	0.513	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.562	

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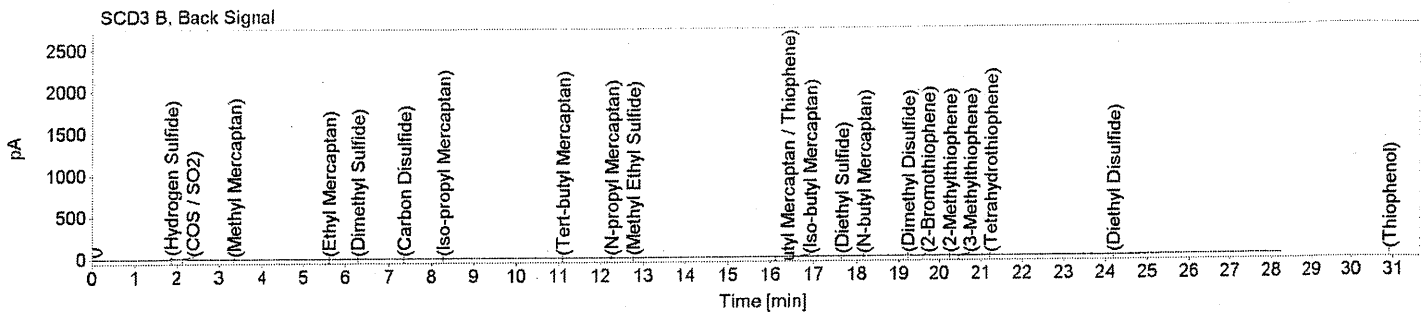
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071921\005B0501.D
Injection date: 7/19/2021 6:43:14 AM
Sample name: RSK-175 H20 BLANK
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

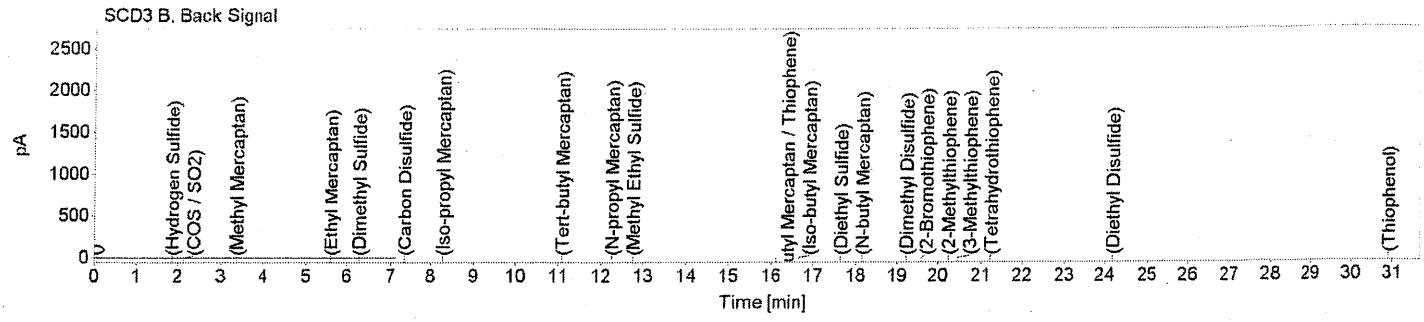
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071921\006B0601.D
Injection date: 7/19/2021 7:14:27 AM
Sample name: 211084-20479 X5
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

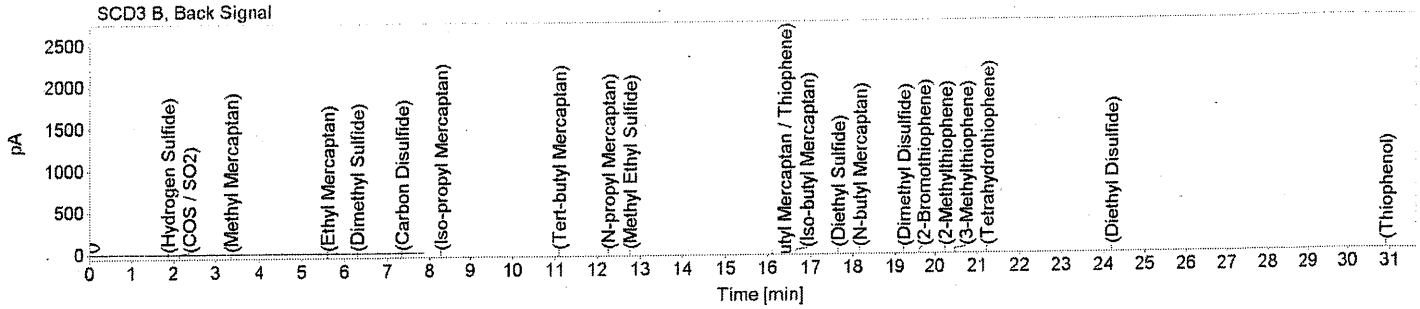
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071921\007B0701.D
Injection date: 7/19/2021 7:22:36 AM
Sample name: 211084-20479 X5 DP
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

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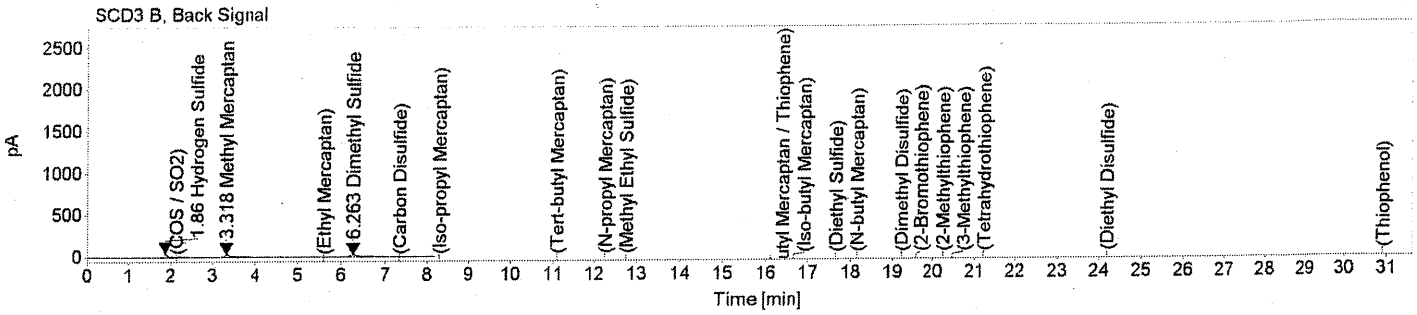
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071921\008B0801.D
Injection date: 7/19/2021 7:32:52 AM
Sample name: 211084-20479 MS (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



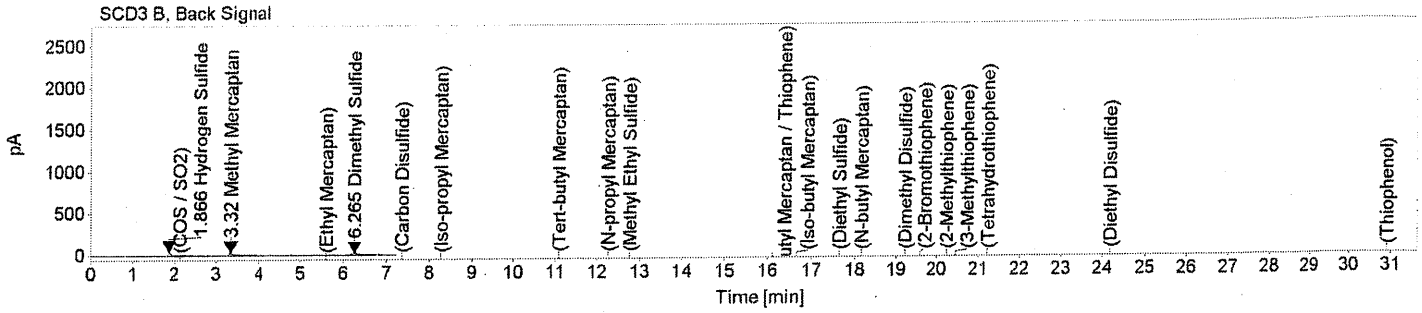
Uncalibrated Peaks: using H2S

Description		SCD3 B, Back Signal	
RT [min]	Area	Amount [ppm]	Name
1.860	240.3	0.254	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.318	263.05	0.252	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.263	264.67	0.253	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.759	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071921\009B0901.D
Injection date: 7/19/2021 7:43:50 AM
Sample name: 211084-20479 MSD (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

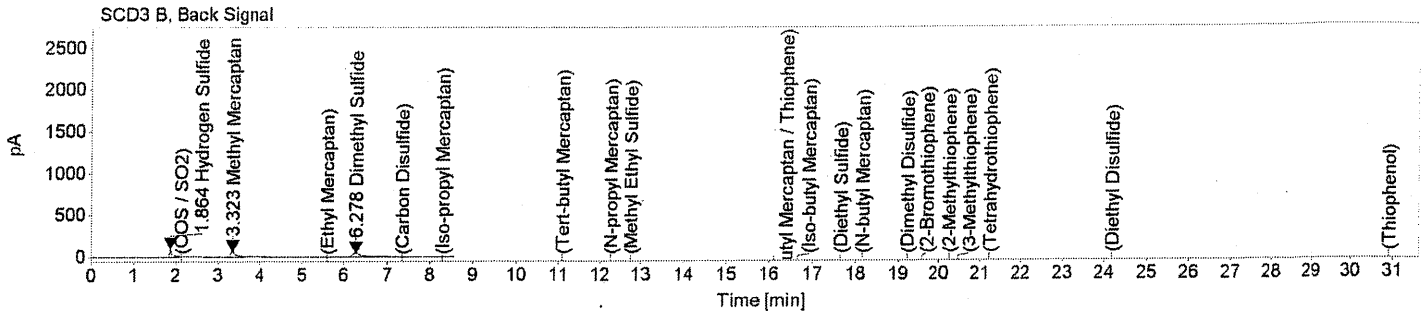
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.866	251.28	0.265	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.320	263.68	0.253	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.265	260.82	0.250	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.768	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\071921\028B2601.D
Injection date: 7/19/2021 3:54:40 PM
Sample name: CCV 0.5 ppm H2S/MeSH/DMS (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

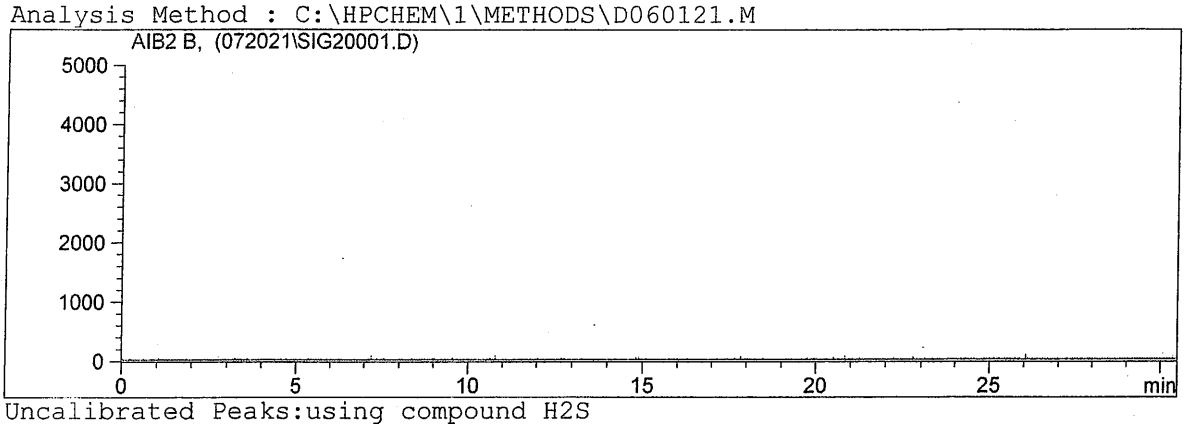
RT [min]	Area	Amount [ppm]	Name
1.864	505.74	0.534	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.323	541.11	0.519	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.278	546.63	0.523	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.576	

7/19/21

Data file :C:\HPCHEM\1\DATA\072021\SIG20001.D

Customized Report: D5504

Injection Date : 7/20/2021 5:34:15 AM Seq. Line :1
Sample Name : System Blank
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



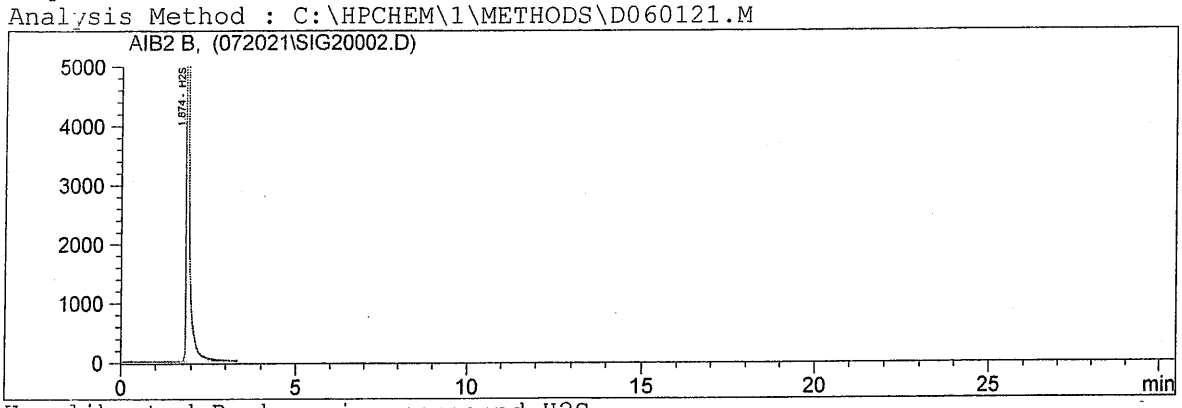
Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

*** End of Report ***

Customized Report: D5504

Injection Date : 7/20/2021 6:11:21 AM Seq. Line :2
Sample Name : H2S Primer 20 ppm SS1284x1
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

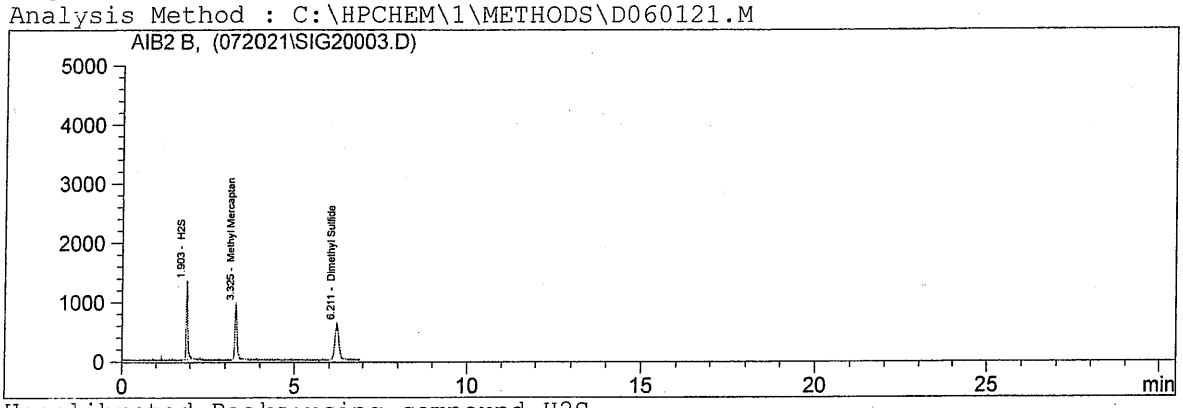
Ret Time [min]	Area	Amount [ppbV]	Name
1.874	152296	22493.393	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		22493.393	

*** End of Report ***

7/20/21

Customized Report: D5504

Injection Date : 7/20/2021 6:16:37 AM Seq. Line :3
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

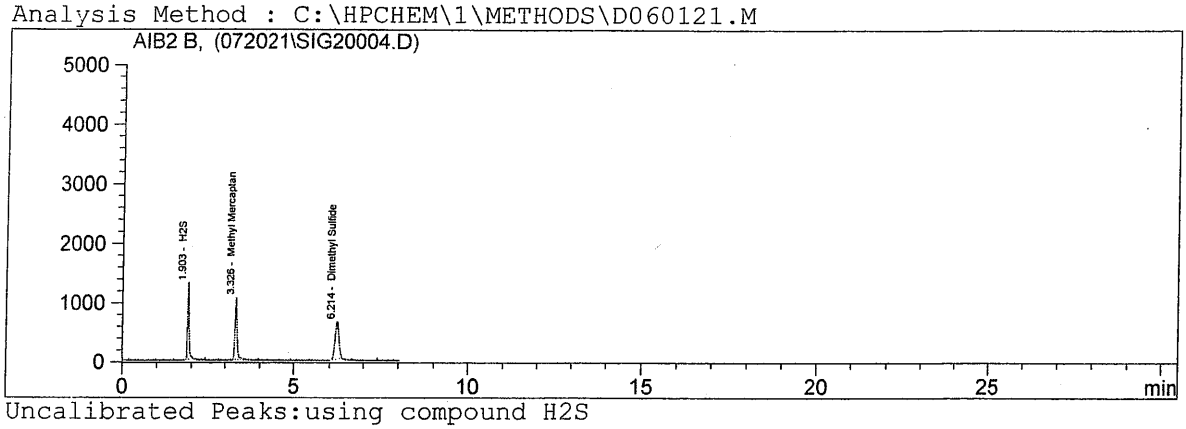
Ret Time [min]	Area	Amount [ppbV]	Name
1.903	3610	533.181	H2S
0.000	0	0.000	COS / SO2
3.325	4322	515.421	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.211	4754	510.160	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1558.762	

*** End of Report ***

7/20/21

Customized Report: D5504

Injection Date : 7/20/2021 6:25:05 AM Seq. Line :4
Sample Name : CCV 500 ppbV dp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.903	3601	531.849	H2S
0.000	0	0.000	COS / SO2
3.326	4384	522.819	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.214	4816	516.841	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1571.509	

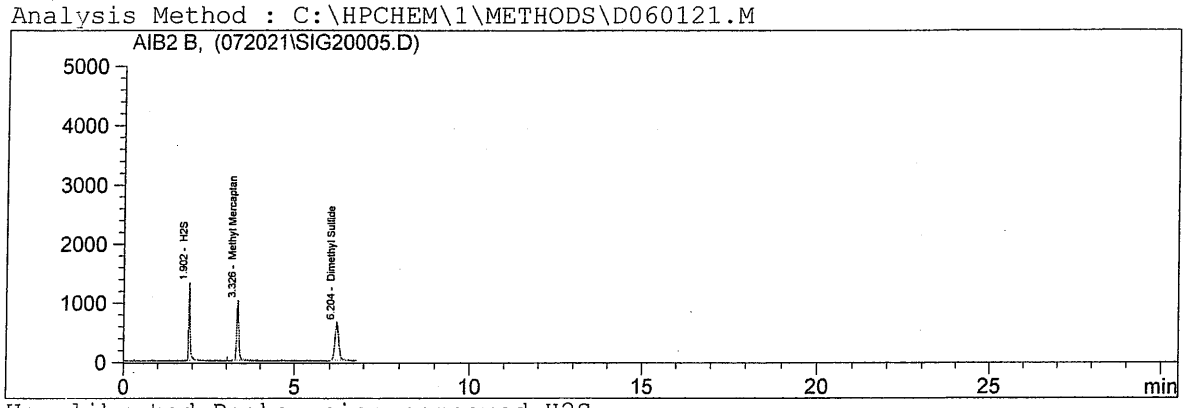
*** End of Report ***

7/20/21

Data File :C:\HPCHEM\1\DATA\072021\SIG20005.D

Customized Report: D5504

Injection Date : 7/20/2021 6:35:19 AM Seq. Line :5
Sample Name : CCV 500 ppbV tp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.902	3594	530.874	H2S
0.000	0	0.000	COS / SO2
3.326	4352	518.963	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.204	4850	520.492	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1570.328	

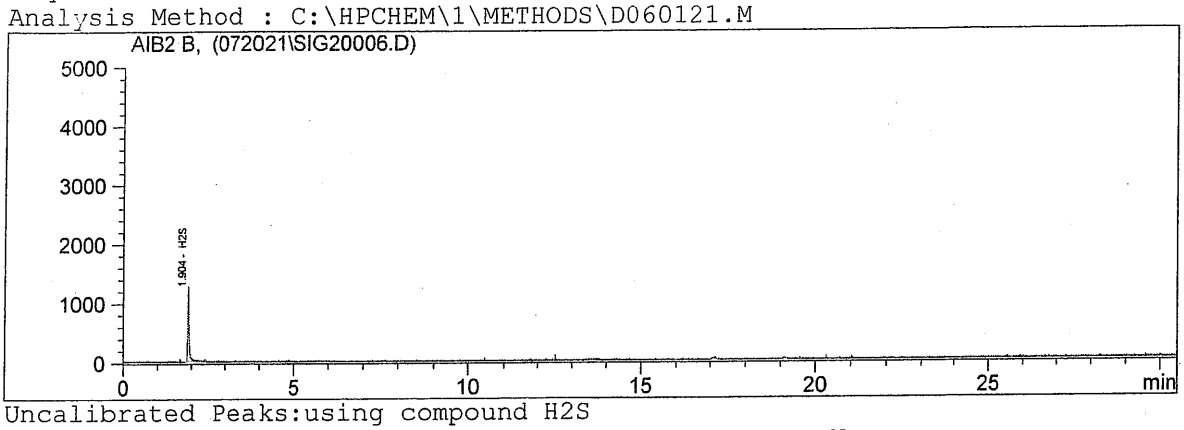
*** End of Report ***

7/20/21

Data File :C:\HPCHEM\1\DATA\072021\SIG20006.D

Customized Report: D5504

Injection Date : 7/20/2021 6:46:33 AM Seq. Line :6
Sample Name : RSK-175 H20 BK
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.904	3357	495.846	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		495.846	

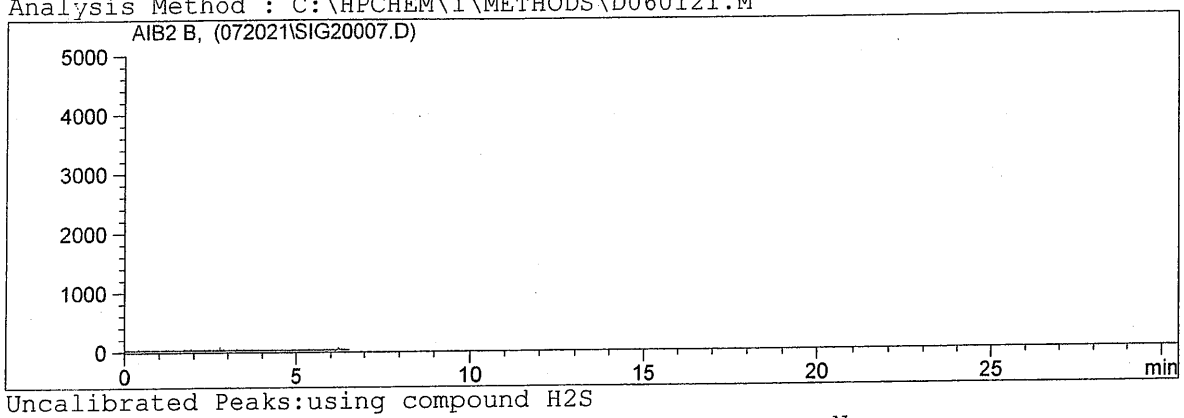
*** End of Report ***

7/20/2021

Data File :C:\HPCHEM\1\DATA\072021\SIG20007.D

Customized Report: D5504

Injection Date : 7/20/2021 7:21:41 AM Seq. Line :7
Sample Name : 211084-20480 x5
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 5.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

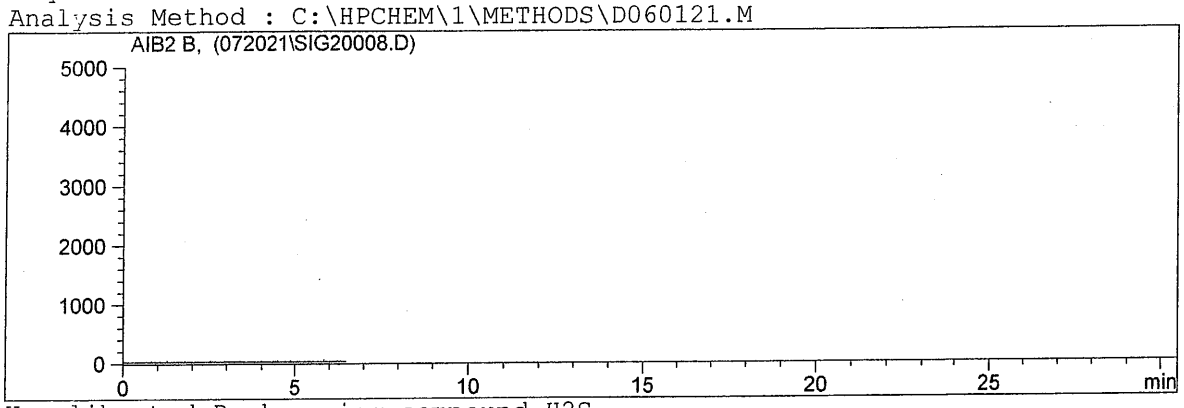
Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

*** End of Report ***

7/20/21

Customized Report: D5504

Injection Date : 7/20/2021 7:30:06 AM Seq. Line :8
Sample Name : 211084-20480 x5 dp
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

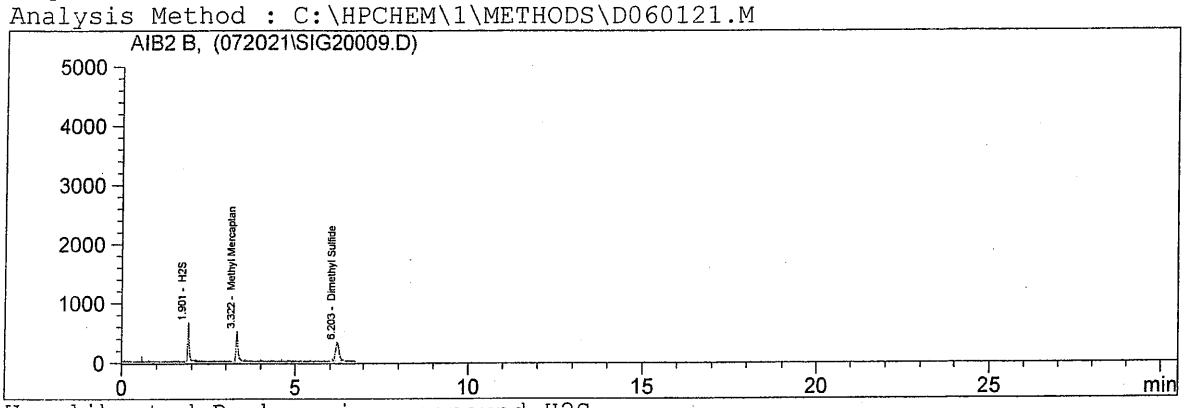
*** End of Report ***

7/20/21

Data file :C:\HPCHEM\1\DATA\072021\SIG20009.D

Customized Report: D5504

Injection Date : 7/20/2021 7:39:56 AM Seq. Line :9
Sample Name : 211084-20480 MS x10 H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

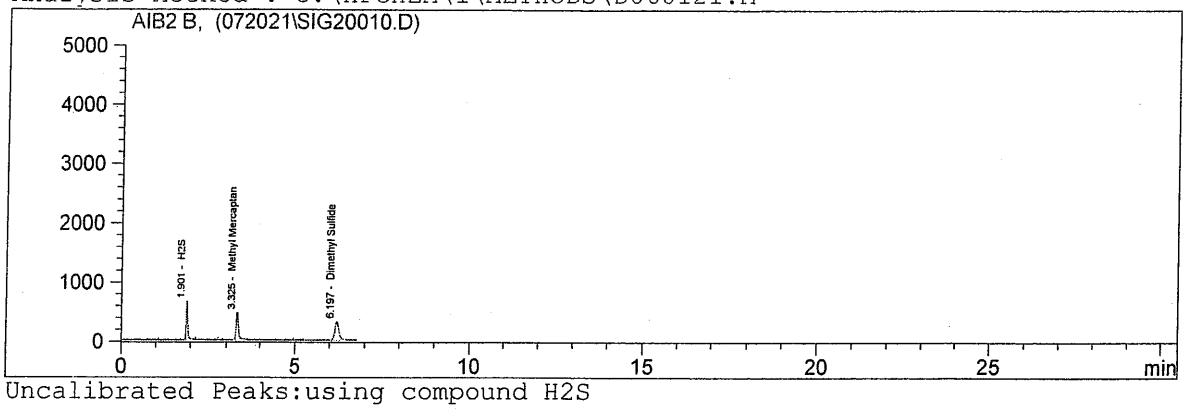
Ret Time [min]	Area	Amount [ppbV]	Name
1.901	1720	254.029	H2S
0.000	0	0.000	COS / SO2
3.322	2131	254.166	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.203	2378	255.182	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		763.377	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\072021\SIG20010.D

Customized Report: D5504

Injection Date : 7/20/2021 7:50:14 AM Seq. Line :10
Sample Name : 211084-20480 MSD x10 H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.901	1749	258.249	H2S
0.000	0	0.000	COS / SO2
3.325	2136	254.741	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.197	2453	263.191	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		776.181	

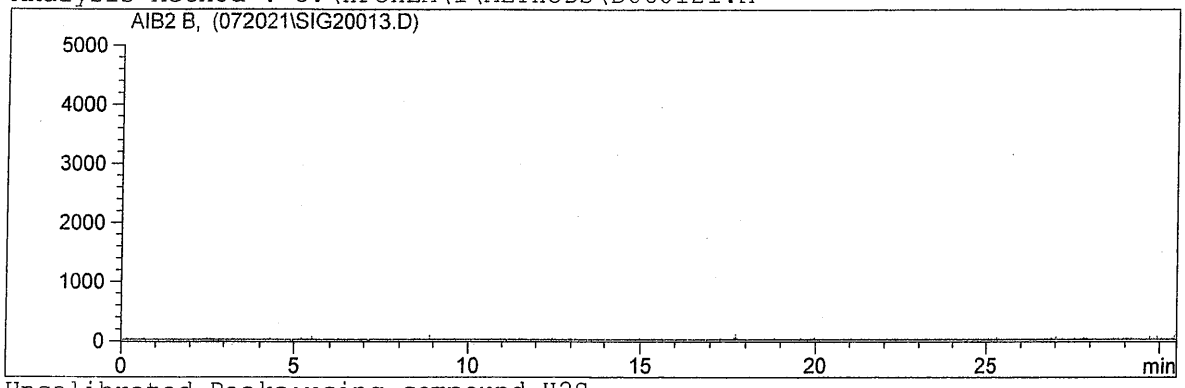
*** End of Report ***

5/20/21

Data file :C:\HPCHEM\1\DATA\072021\SIG20013.D

Customized Report: D5504

Injection Date : 7/20/2021 9:08:35 AM Seq. Line :13
Sample Name : Method Blank
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

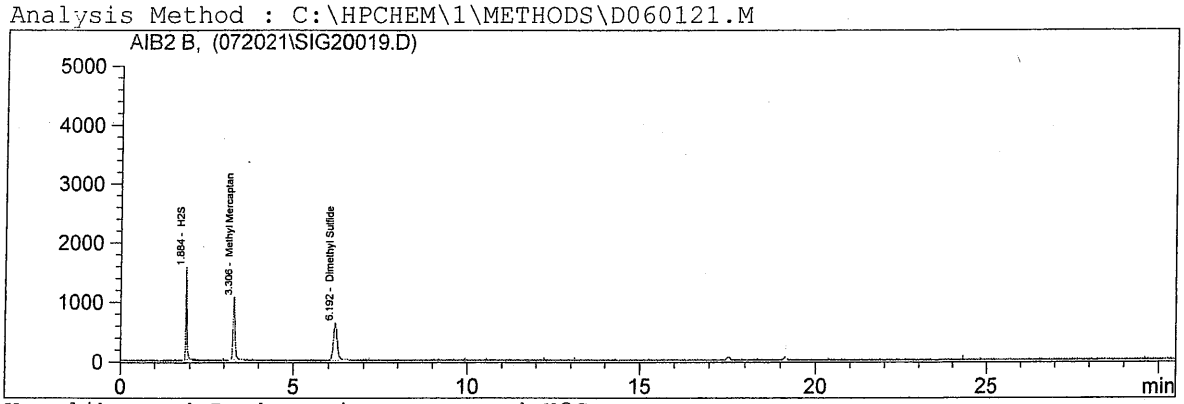
Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\072021\SIG20019.D

Customized Report: D5504

Injection Date : 7/20/2021 11:47:56 AM Seq. Line :19
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.884	3664	541.215	H2S
0.000	0	0.000	COS / SO2
3.306	4390	523.465	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.192	4822	517.455	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1582.135	

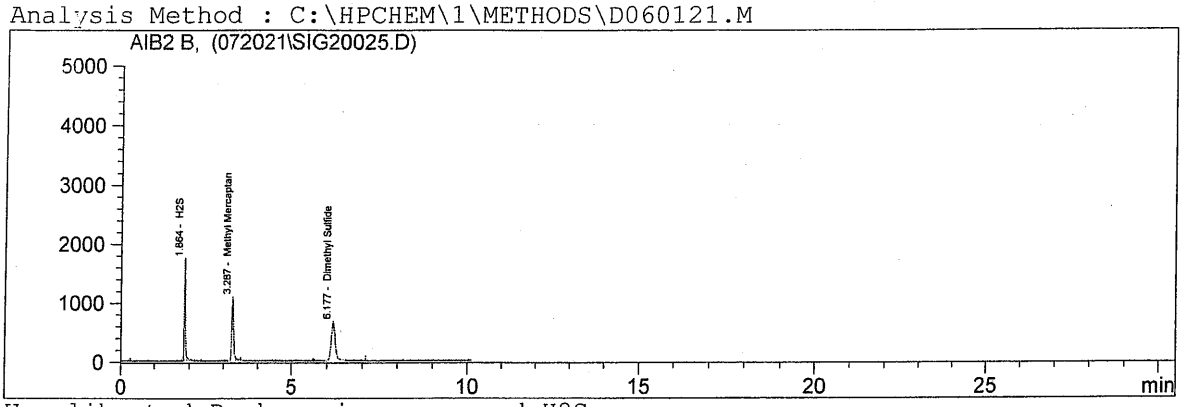
*** End of Report ***

7/20/21

Data file :C:\HPCHEM\1\DATA\072021\SIG20025.D

Customized Report: D5504

Injection Date : 7/20/2021 3:37:45 PM Seq. Line :25
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.864	3697	546.032	H2S
0.000	0	0.000	COS / SO2
3.287	4355	519.302	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.177	4934	529.468	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1594.802	

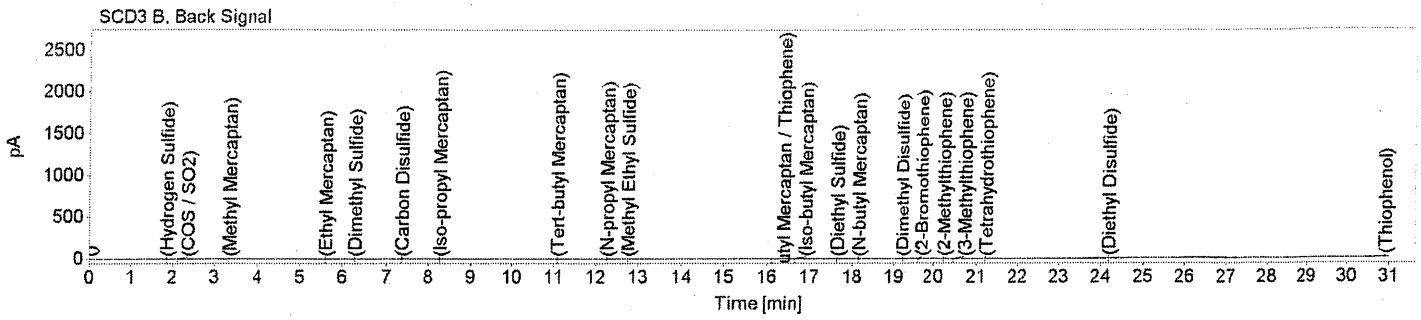
*** End of Report ***

7/20/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072021\001B0101.D
Injection date: 7/20/2021 5:34:32 AM
Sample name: System Blank
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

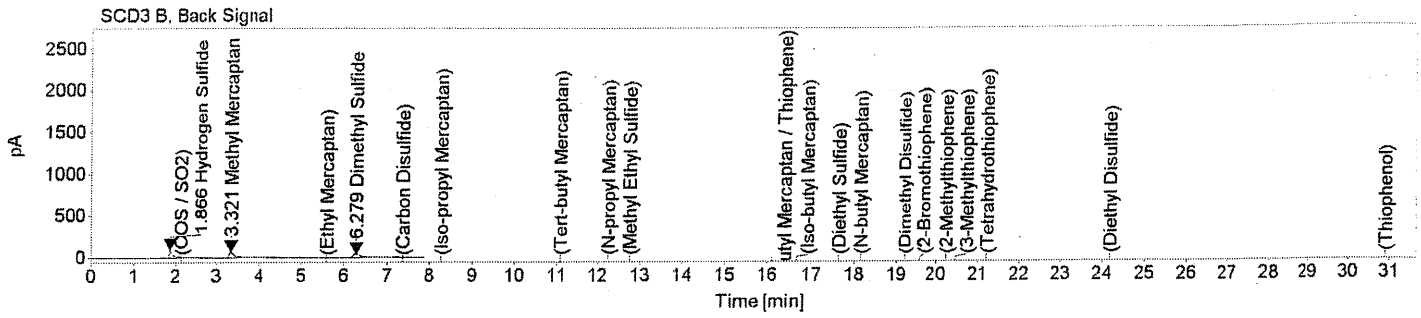
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072021\002B0201.D
Injection date: 7/20/2021 6:13:07 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

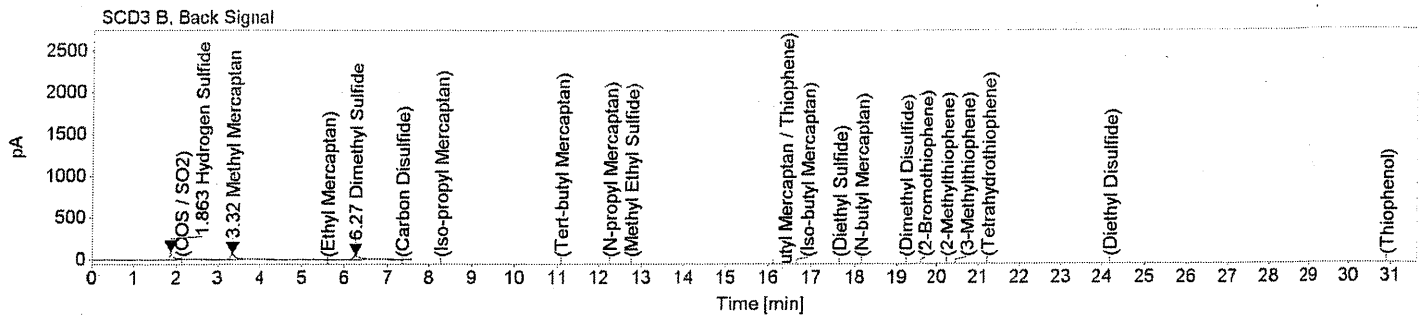
RT [min]	Area	Amount [ppm]	Name
1.866	489.16	0.517	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.321	540.85	0.519	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.279	538.08	0.515	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.551	

7/20/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072021\003B0301.D
Injection date: 7/20/2021 6:24:27 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40) dp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

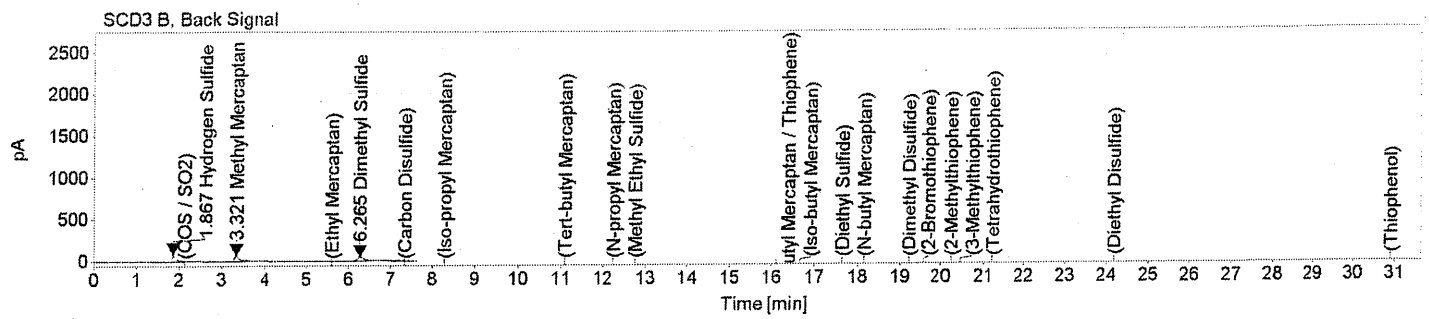
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.863	497.76	0.526	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.320	546.38	0.524	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.270	551.86	0.528	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.578	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072021\004B0401.D
Injection date: 7/20/2021 6:35:46 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40) tp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.867	506.61	0.535	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.321	538.79	0.517	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.265	545.23	0.522	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.574	

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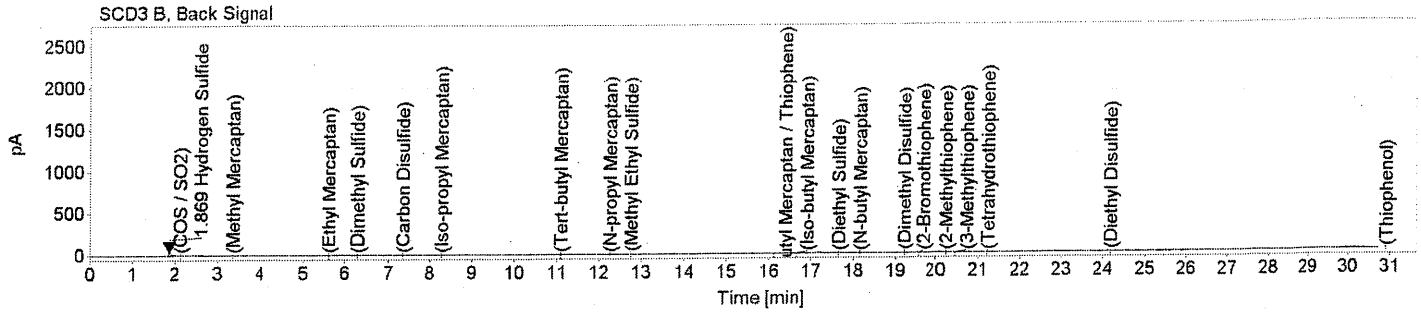
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072021\005B0501.D
Injection date: 7/20/2021 6:47:24 AM
Sample name: RSK-175 H20 BLANK
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

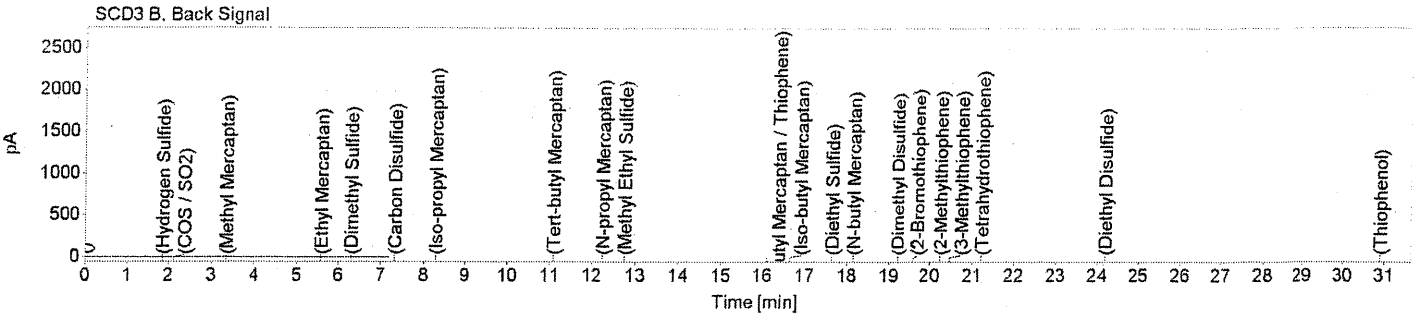
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.869	188.91	0.199	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.199	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072021\006B0601.D
Injection date: 7/20/2021 7:21:26 AM
Sample name: 211084-20479 X5
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

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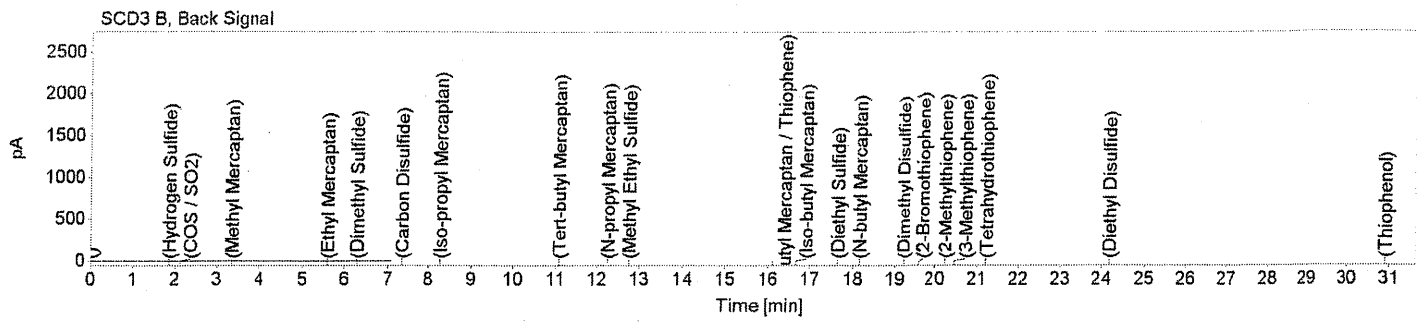
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072021\007B0701.D
Injection date: 7/20/2021 7:29:56 AM
Sample name: 211084-20479 X5 DP
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

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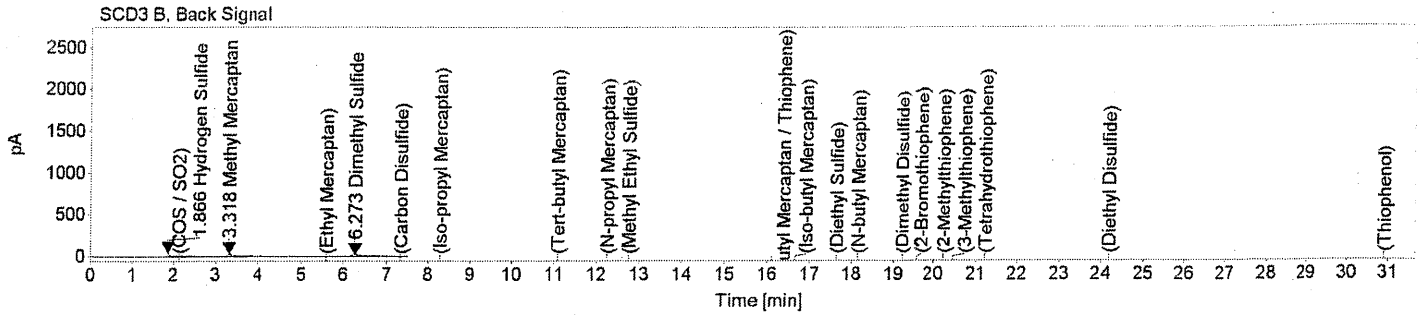
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072021\008B0801.D
Injection date: 7/20/2021 7:39:43 AM
Sample name: 211084-20479 MS (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

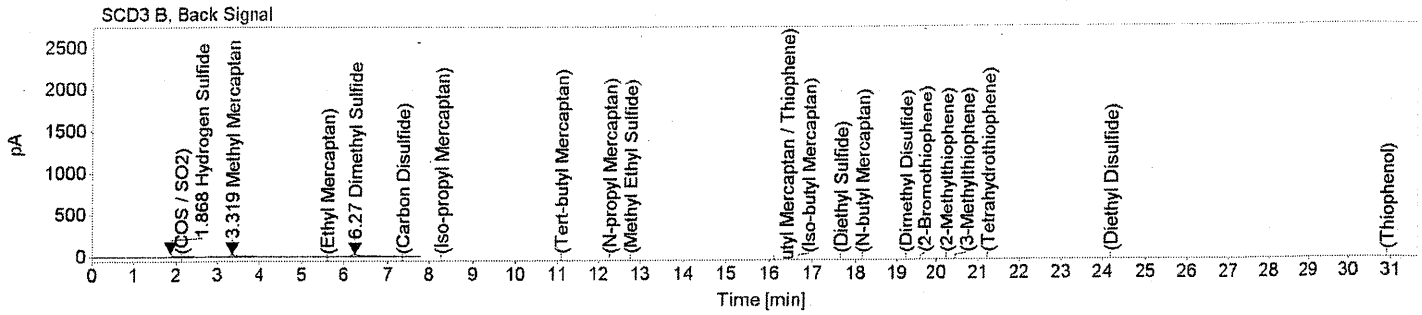
RT [min]	Area	Amount [ppm]	Name
1.866	243.09	0.257	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.318	264.34	0.254	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.273	271.1	0.259	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.770	

7/20/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072021\009B0901.D
Injection date: 7/20/2021 7:50:03 AM
Sample name: 211084-20479 MSD (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

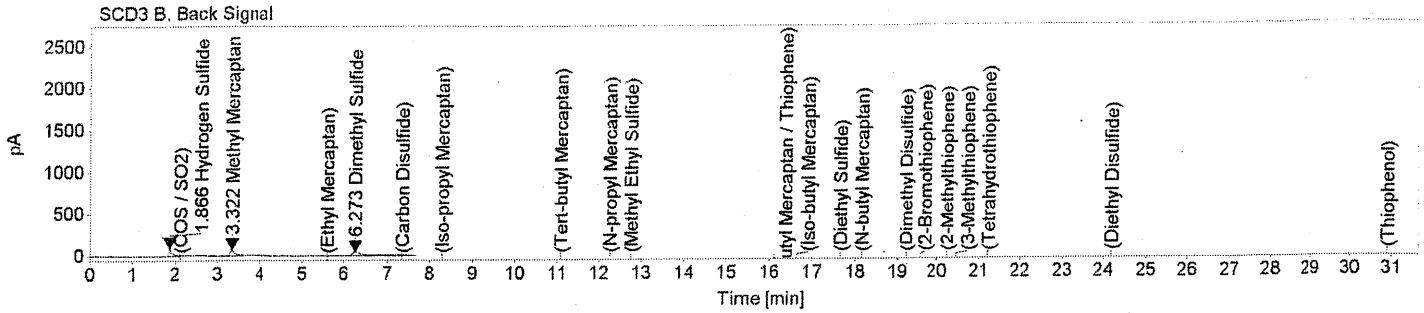
RT [min]	Area	Amount [ppm]	Name
1.868	243.52	0.257	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.319	265.56	0.255	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.270	261.33	0.250	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.762	

7/20/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072021\028B2801.D
Injection date: 7/20/2021 3:53:13 PM
Sample name: CCV 0.5 ppm H2S/MeSH/DMS (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

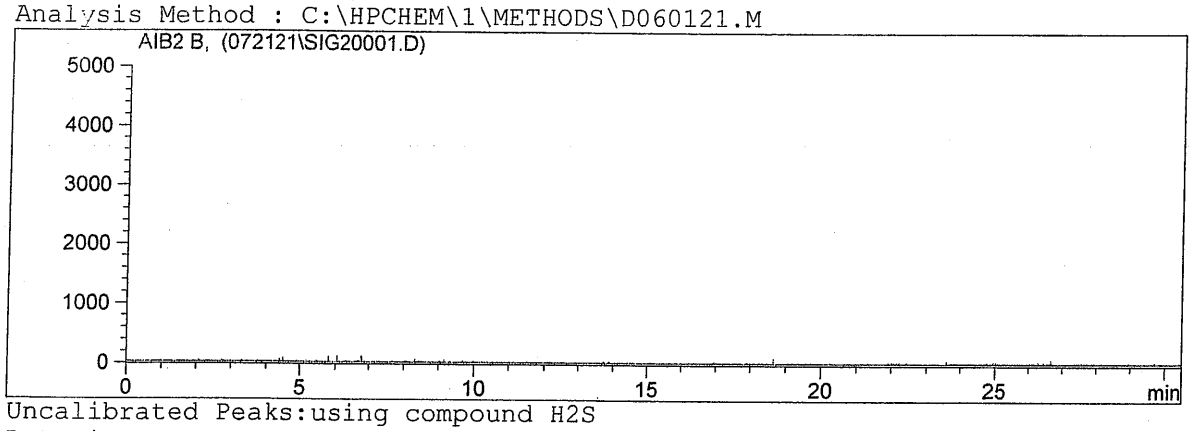
RT [min]	Area	Amount [ppm]	Name
1.866	519.3	0.548	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.322	542.15	0.520	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.273	566.08	0.542	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.610	

7/20/2021

Data File :C:\HPCHEM\1\DATA\072121\SIG20001.D

Customized Report: D5504

Injection Date : 7/21/2021 5:33:16 AM Seq. Line :1
Sample Name : System Blank
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

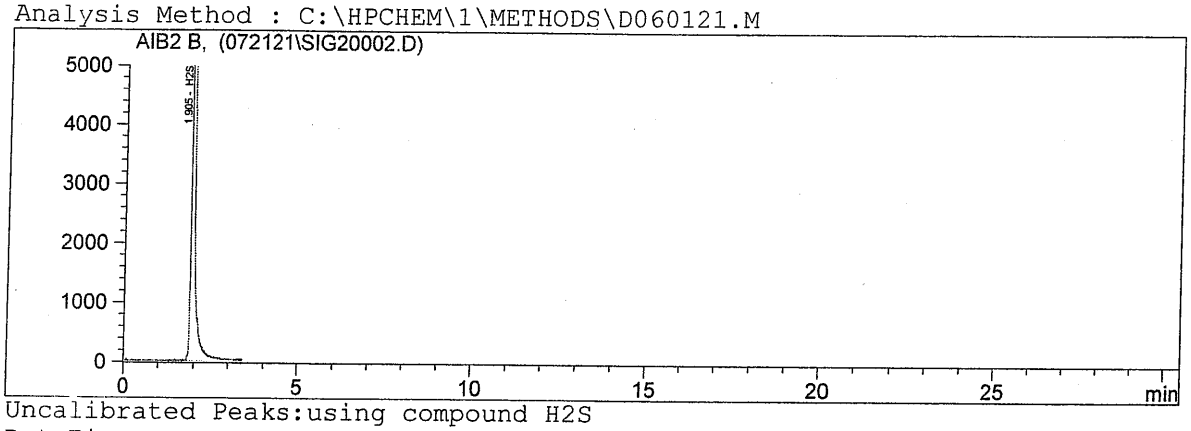
*** End of Report ***

8/21/21

Data File :C:\HPCHEM\1\DATA\072121\SIG20002.D

Customized Report: D5504

Injection Date : 7/21/2021 6:08:51 AM Seq. Line :2
Sample Name : H2S Primer 20 ppm SS1284x1
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.905	190085	28074.657	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		28074.657	

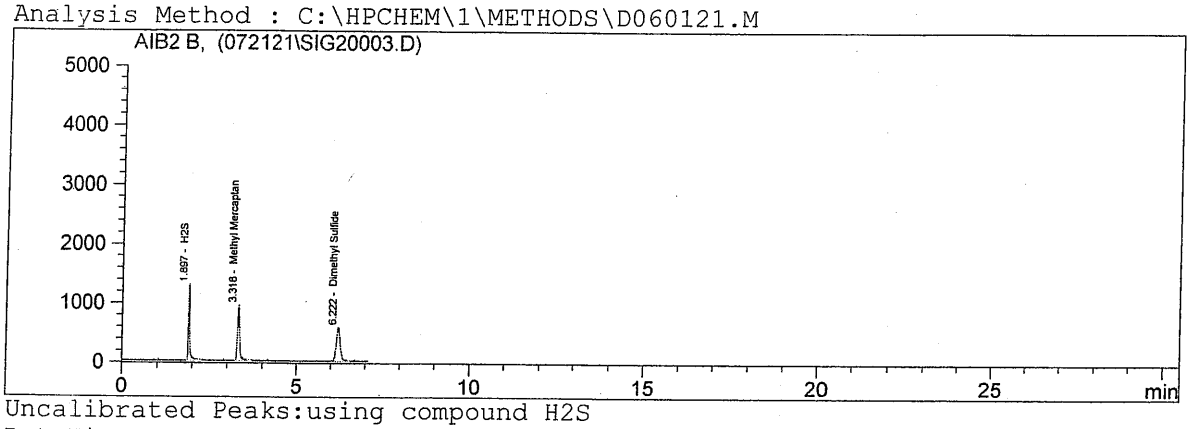
*** End of Report ***

7/21/21

Data File :C:\HPCHEM\1\DATA\072121\SIG20003.D

Customized Report: D5504

Injection Date : 7/21/2021 6:16:05 AM Seq. Line :3
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.897	3594	530.783	H2S
0.000	0	0.000	COS / SO2
3.318	4283	510.744	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.222	4782	513.177	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1554.704	

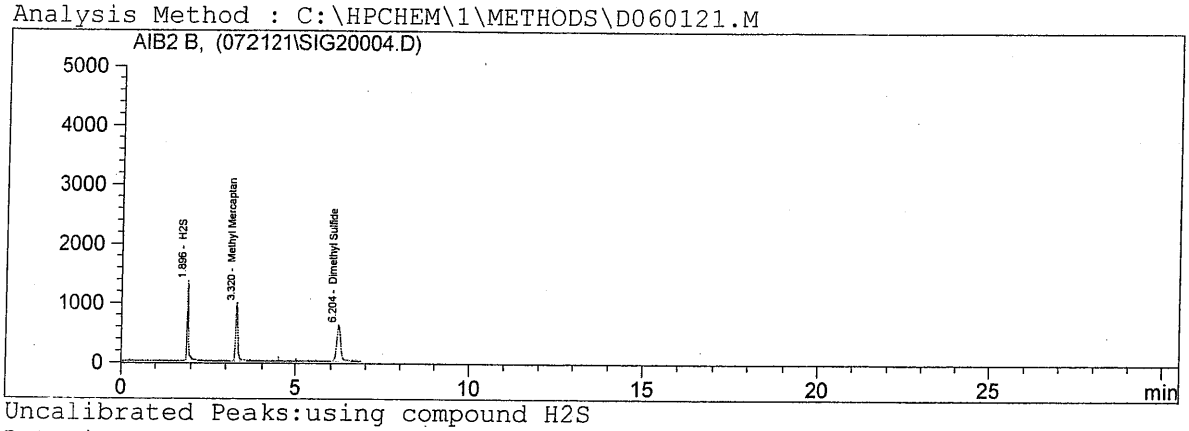
*** End of Report ***

7/21/21

Data File :C:\HPCHEM\1\DATA\072121\SIG20004.D

Customized Report: D5504

Injection Date : 7/21/2021 6:26:02 AM Seq. Line :4
Sample Name : CCV 500 ppbV dp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.896	3562	526.031	H2S
0.000	0	0.000	COS / SO2
3.320	4278	510.106	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.204	4809	516.114	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1552.251	

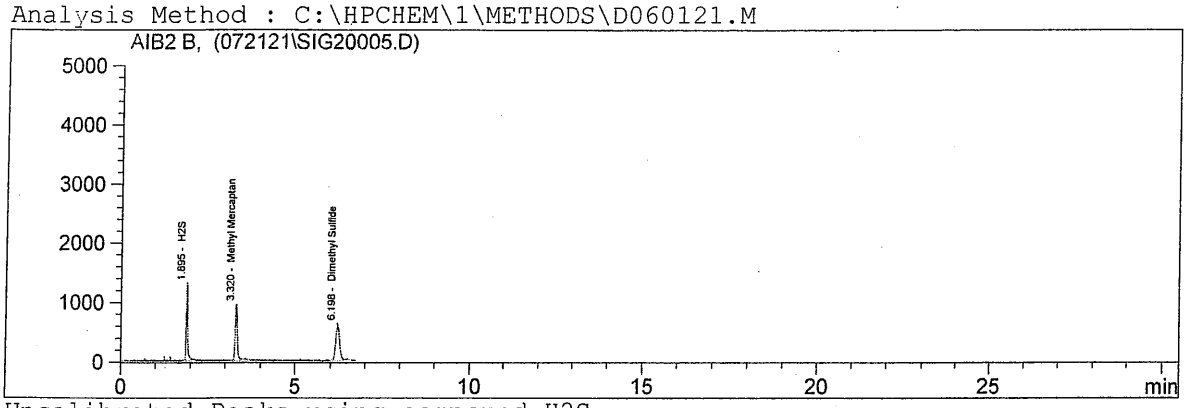
*** End of Report ***

7/21/21

Data File :C:\HPCHEM\1\DATA\072121\SIG20005.D

Customized Report: D5504

Injection Date : 7/21/2021 6:36:24 AM Seq. Line :5
Sample Name : CCV 500 ppbV tp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.895	3621	534.834	H2S
0.000	0	0.000	COS / SO2
3.320	4319	515.014	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.198	4862	521.780	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1571.628	

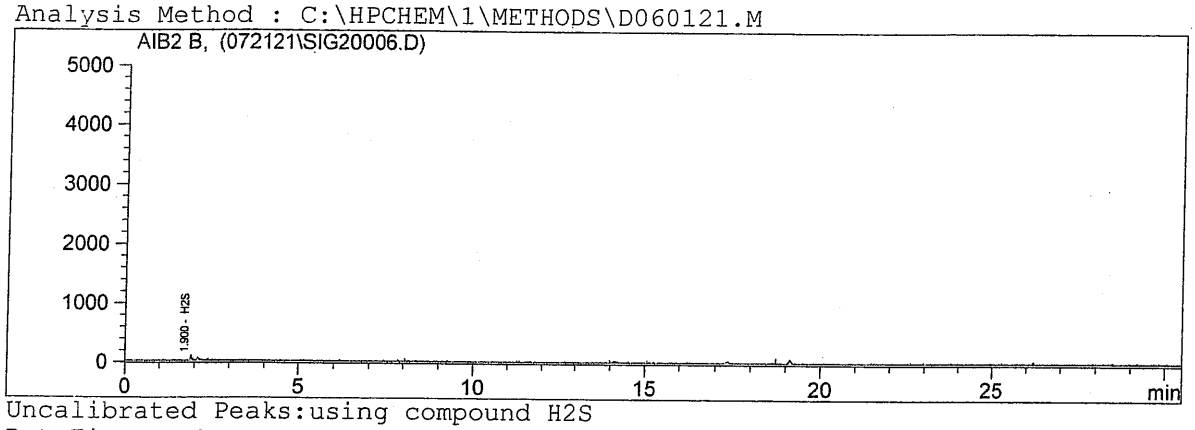
*** End of Report ***

7/21/21

Data File :C:\HPCHEM\1\DATA\072121\SIG20006.D

Customized Report: D5504

Injection Date : 7/21/2021 6:46:39 AM Seq. Line :6
Sample Name : RSK-175 H20 BK
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.900	186	27.403	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		27.403	

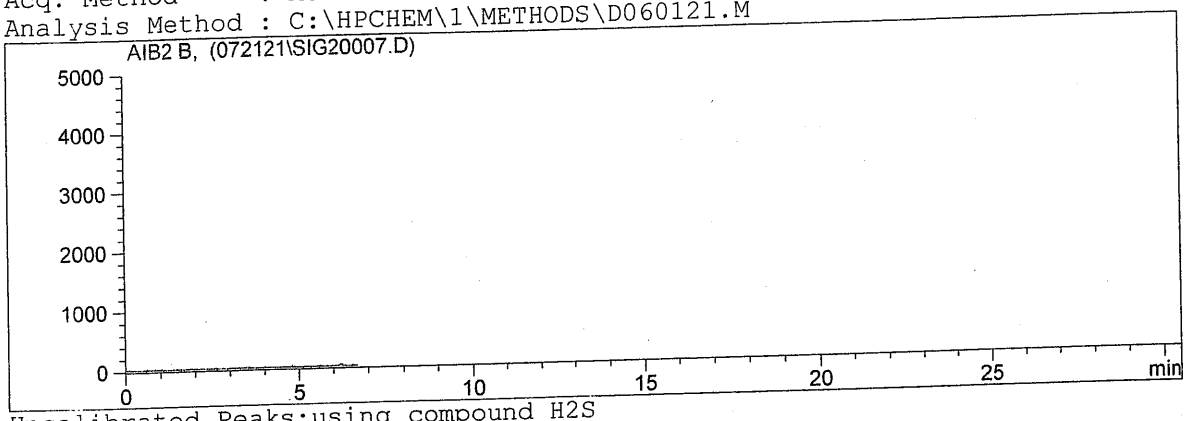
*** End of Report ***

7/21/21

Data File :C:\HPCHEM\1\DATA\072121\SIG20007.D

Customized Report: D5504

Injection Date : 7/21/2021 7:22:56 AM Seq. Line :7
Sample Name : 211084-20480 x5
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 5.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

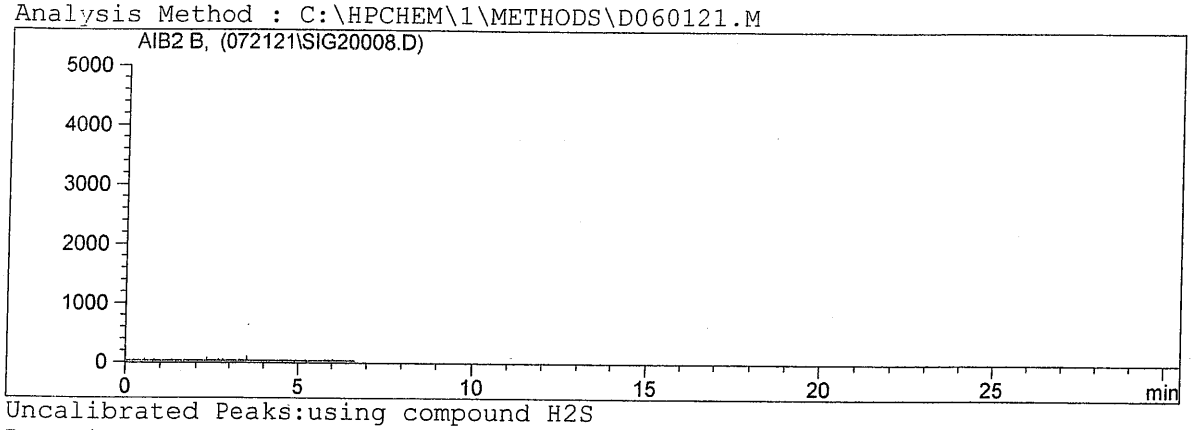
*** End of Report ***

7/21/21

Data File :C:\HPCHEM\1\DATA\072121\SIG20008.D

Customized Report: D5504

Injection Date : 7/21/2021 7:31:38 AM Seq. Line :8
Sample Name : 211084-20480 x5 dp
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
		0.000	

Totals:

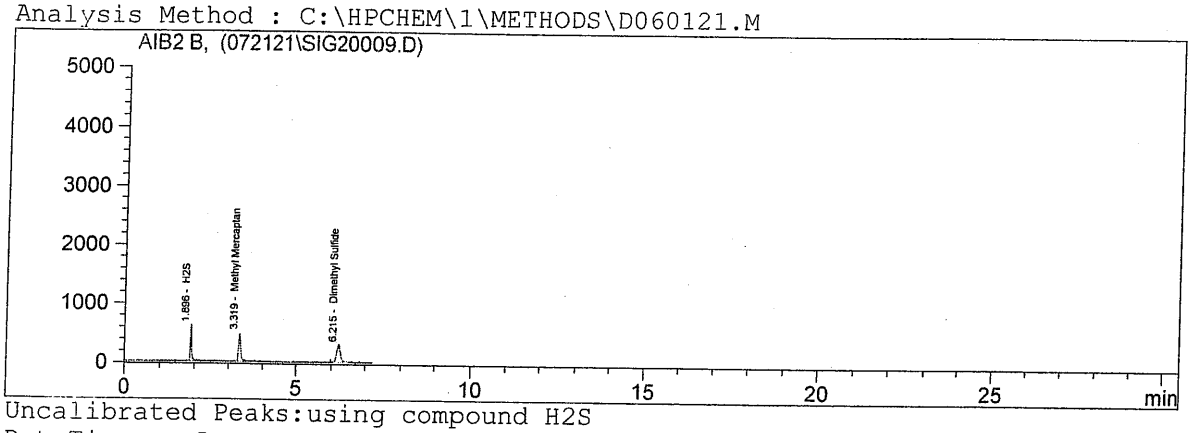
*** End of Report ***

7/21/21

Data File :C:\HPCHEM\1\DATA\072121\SIG20009.D

Customized Report: D5504

Injection Date : 7/21/2021 7:41:02 AM Seq. Line :9
Sample Name : 211084-20480 MS x10 H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

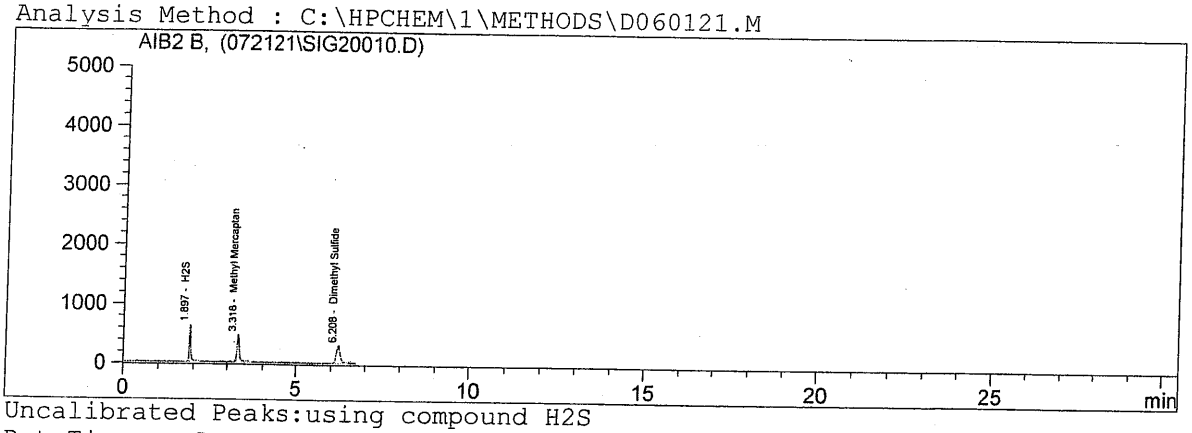
Ret Time [min]	Area	Amount [ppbV]	Name
1.896	1725	254.752	H2S
0.000	0	0.000	COS / SO2
3.319	2137	254.874	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.215	2327	249.756	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		759.382	

*** End of Report ***

7/21/21

Customized Report: D5504

Injection Date : 7/21/2021 7:51:57 AM Seq. Line :10
Sample Name : 211084-20480 MSD x10 H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

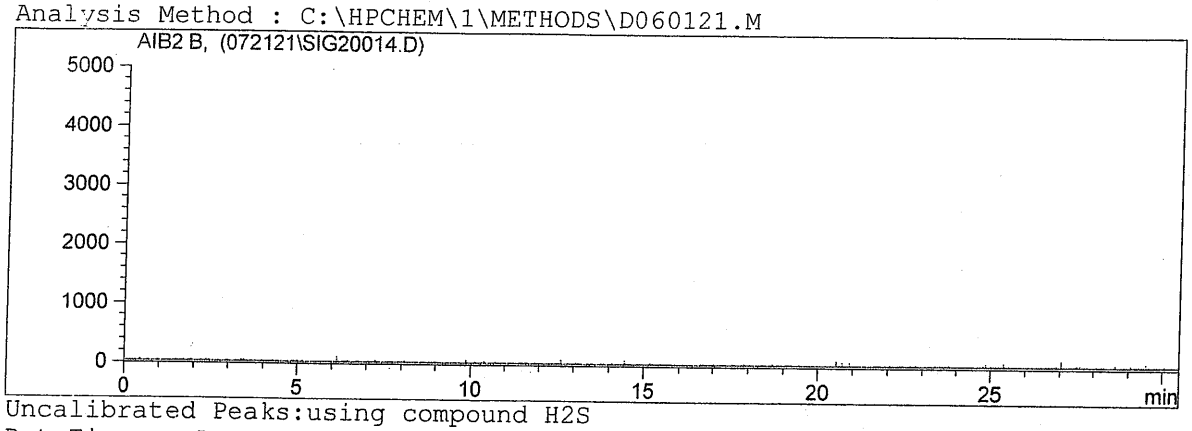
Ret Time [min]	Area	Amount [ppbV]	Name
1.897	1770	261.489	H2S
0.000	0	0.000	COS / SO2
3.318	2109	251.528	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.208	2407	258.316	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		771.333	

*** End of Report ***

7/21/21

Customized Report: D5504

Injection Date : 7/21/2021 10:04:38 AM Seq. Line :14
Sample Name : Method Blank
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

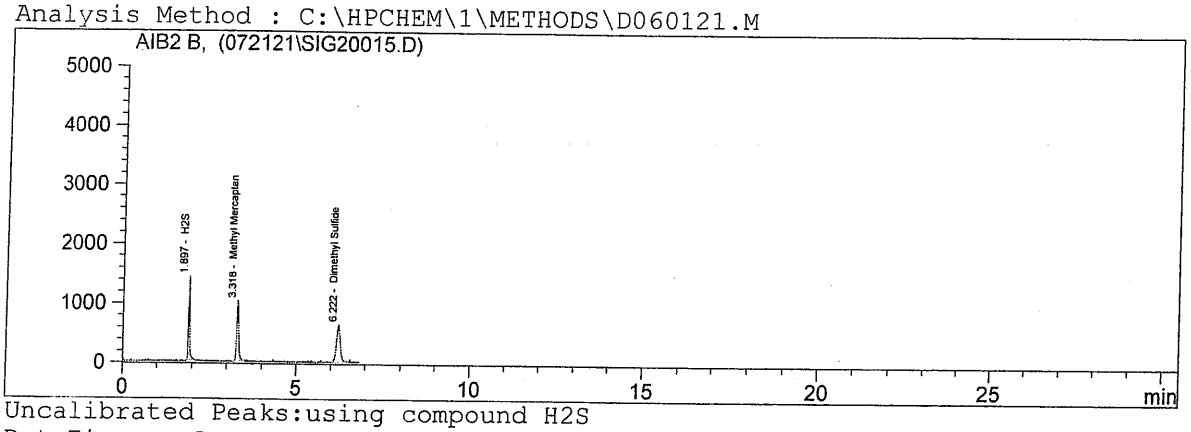
Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

*** End of Report ***

7/21

Customized Report: D5504

Injection Date : 7/21/2021 10:40:37 AM Seq. Line :15
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

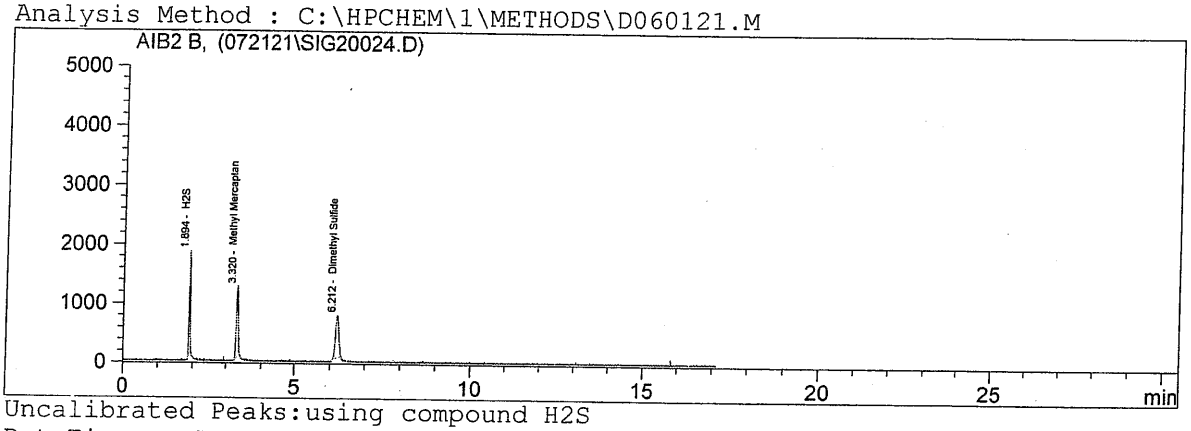
Ret Time [min]	Area	Amount [ppbV]	Name
1.897	3559	525.575	H2S
0.000	0	0.000	COS / SO2
3.318	4248	506.571	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.222	4743	508.950	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1541.097	

*** End of Report ***

7/21/21

Customized Report: D5504

Injection Date : 7/21/2021 4:47:23 PM Seq. Line :24
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1227x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

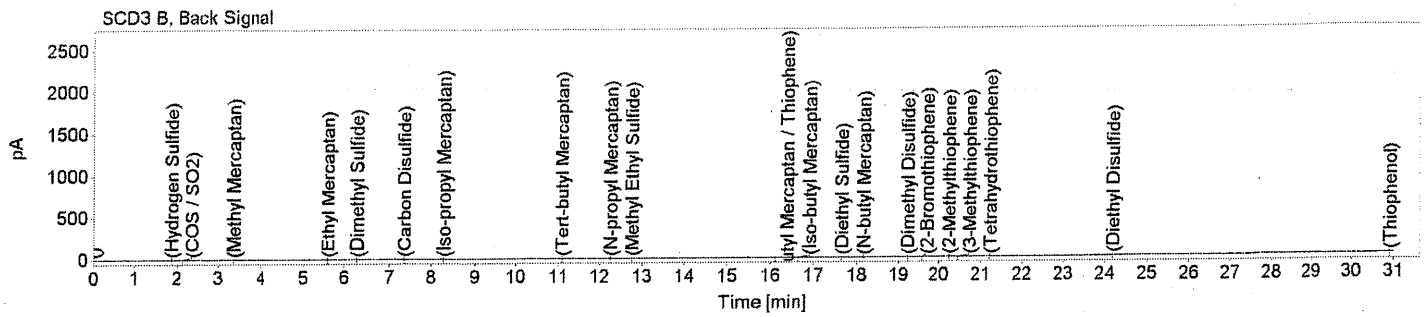
Ret Time [min]	Area	Amount [ppbV]	Name
1.894	3791	559.852	H2S
0.000	0	0.000	COS / SO2
3.320	4737	564.912	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.212	5080	545.192	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1669.956	

*** End of Report ***

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072121\001B0101.D
Injection date: 7/21/2021 5:33:45 AM
Sample name: System Blank
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

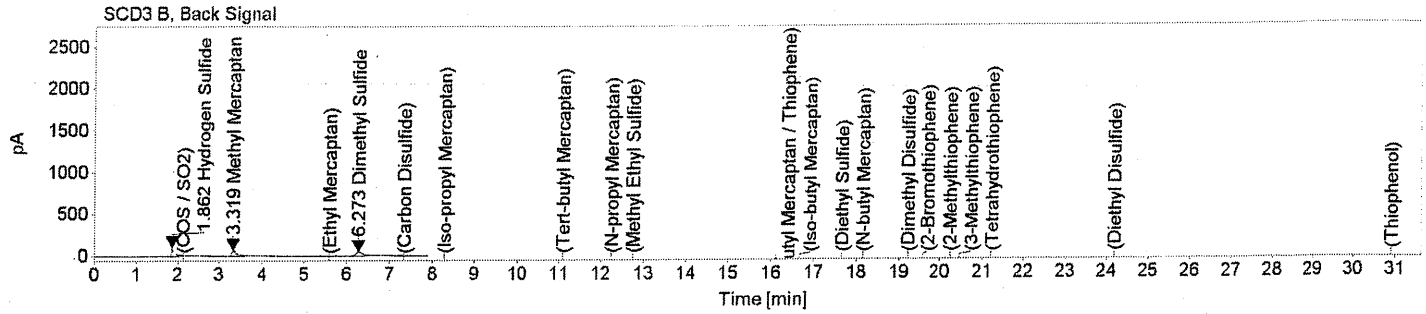
Description		SCD3 B, Back Signal	
RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

7/21/M

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072121\002B0201.D
Injection date: 7/21/2021 6:15:59 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

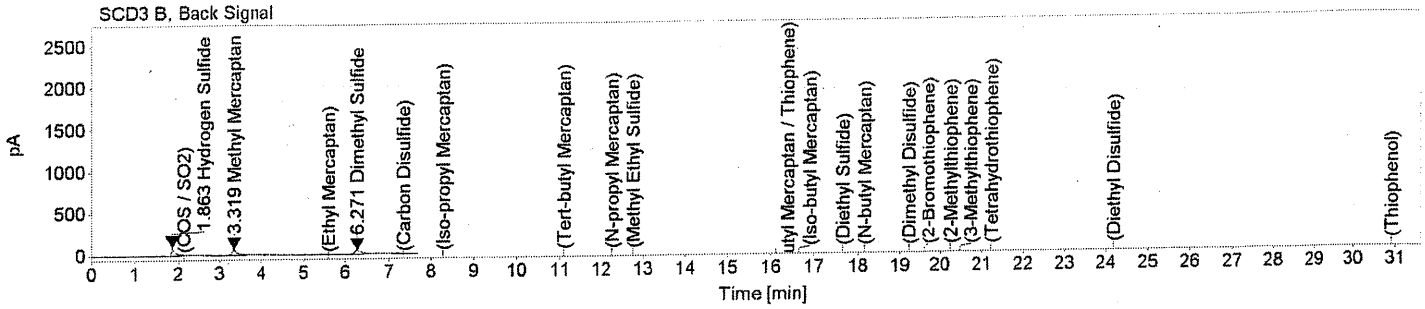
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.862	496.18	0.524	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.319	546.26	0.524	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.273	541.18	0.518	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.566	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072121\003B0301.D
Injection date: 7/21/2021 6:25:55 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40) dp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

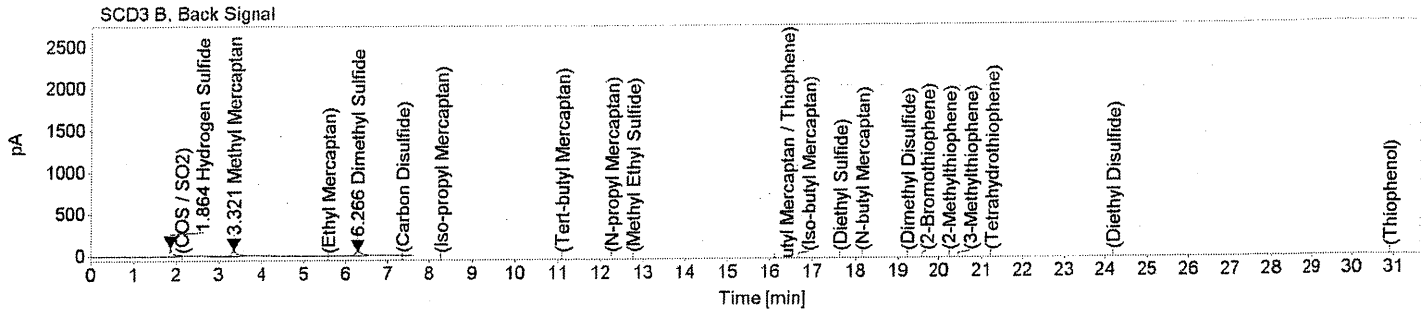
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.863	506.89	0.535	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.319	543.17	0.521	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.271	527.79	0.505	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.562	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072121\004B0401.D
Injection date: 7/21/2021 6:36:16 AM
Sample name: 0.5 ppmV H2S/MeSh/DMS (SS1289x40) tp
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

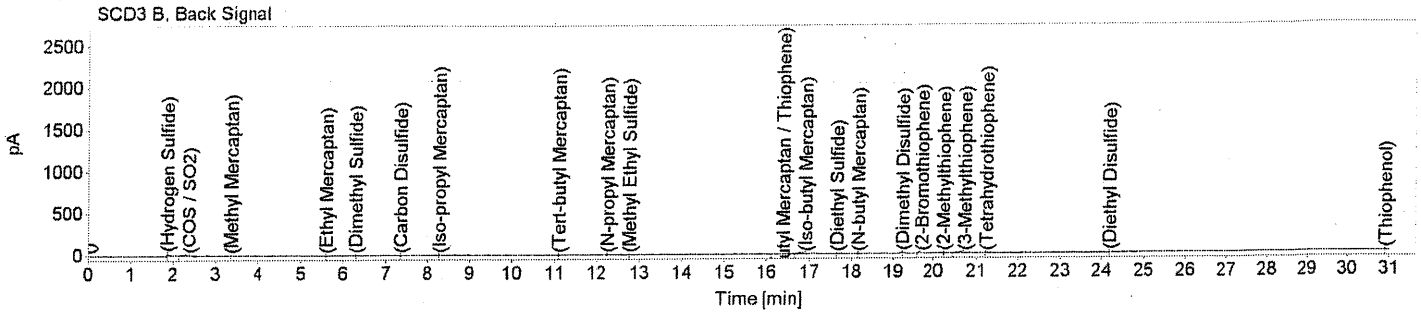
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.864	501.14	0.529	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.321	550.32	0.528	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.266	551.78	0.528	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.585	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072121\005B0501.D
Injection date: 7/21/2021 6:48:20 AM
Sample name: RSK-175 H20 BLANK
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

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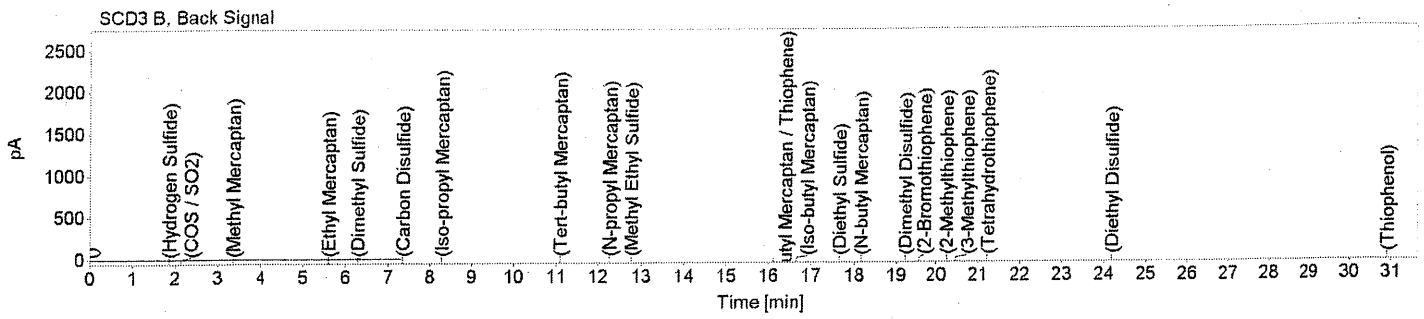
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072121\006B0601.D
Injection date: 7/21/2021 7:22:47 AM
Sample name: 211084-20479 X5
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

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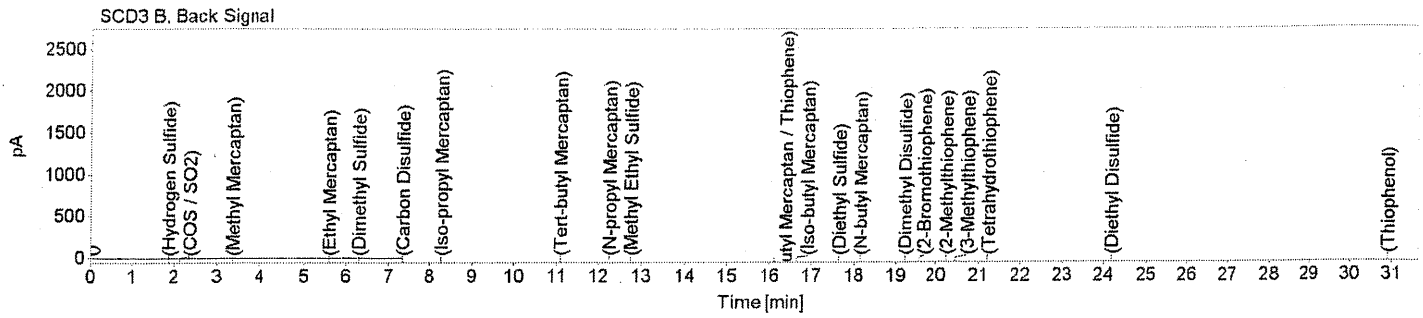
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072121\007B0701.D
Injection date: 7/21/2021 7:31:25 AM
Sample name: 211084-20479 X5 DP
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

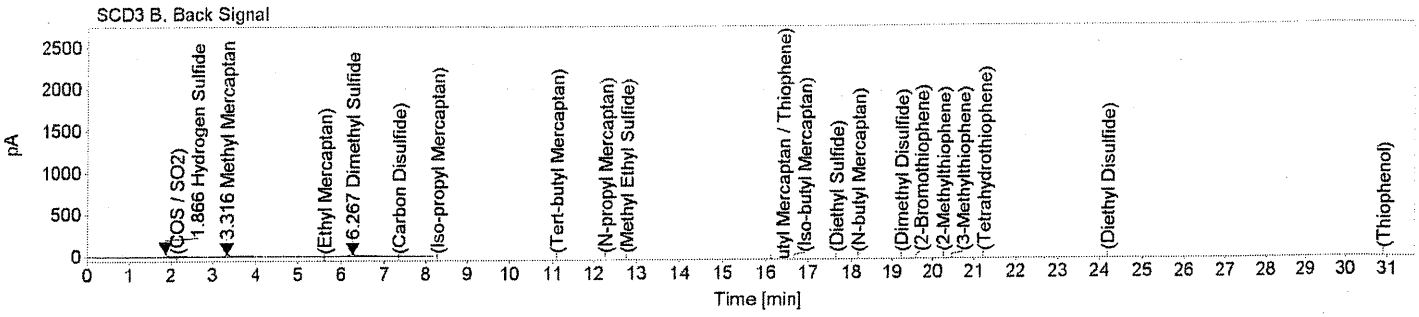
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072121\008B0801.D
Injection date: 7/21/2021 7:40:48 AM
Sample name: 211084-20479 MS (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.866	234.77	0.248	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.316	264.77	0.254	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.267	264.76	0.253	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.755	

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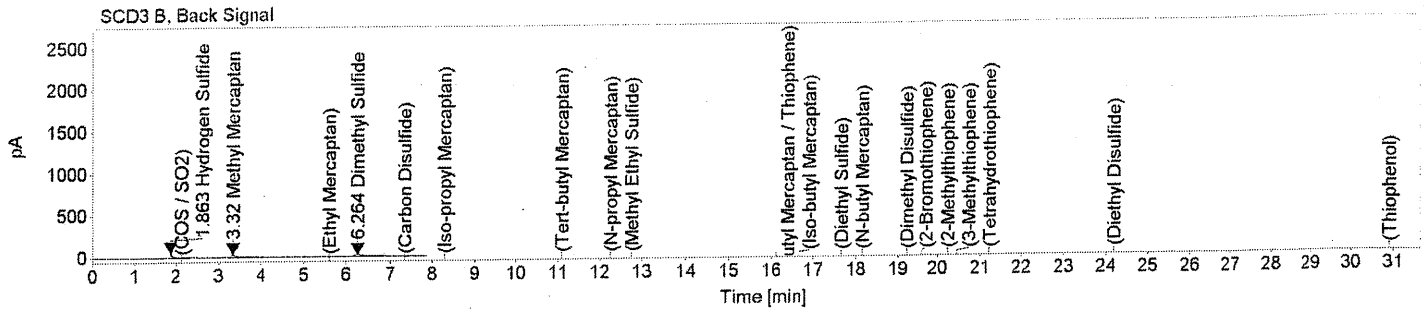
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072121\009B0901.D
Injection date: 7/21/2021 7:51:41 AM
Sample name: 211084-20479 MSD (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description		SCD3 B, Back Signal	
RT [min]	Area	Amount [ppm]	Name
1.863	242.9	0.257	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.320	275.94	0.265	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.264	268.75	0.257	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.778	

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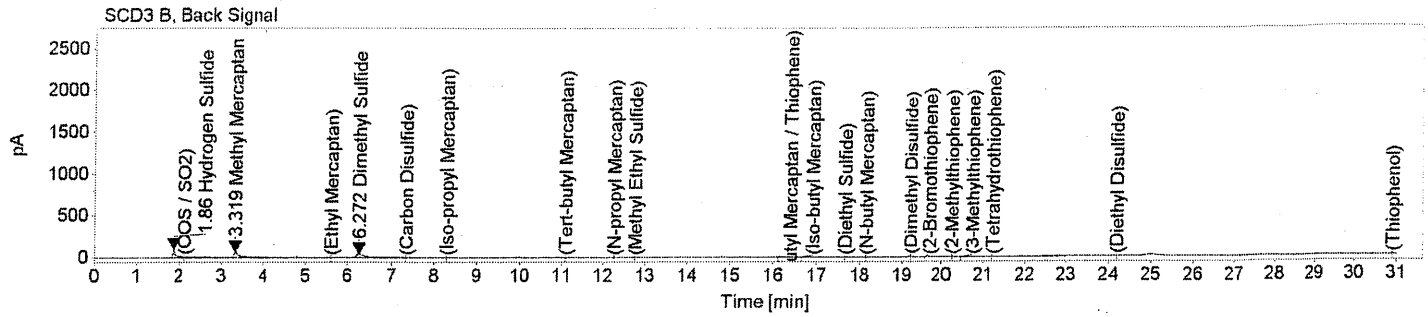
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\072121\019B1901.D
Injection date: 7/21/2021 3:41:55 PM
Sample name: CCV 0.5 ppm H2S/MeSH/DMS (SS1192 x40)
Acq. method: SCD_Only.M
Analysis method: TRS 070521.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.860	522.11	0.551	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.319	554.67	0.532	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.272	575.16	0.550	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	1.634	

7/21/21

CALIBRATION SUMMARY

Calibration Summary

SCAQMD 307.91 / ASTM D-5504 INITIAL CALIBRATION SUMMARY

Analysis Date: 6/1/2021
Analyst: DL

Standard ID: SS1289
Concentration: 20.79
Units: ppm
Instrument: SCD #10

CALIBRATION CURVE RAW DATA:

Hydrogen Sulfide								
H_2S Standard Concentration (ppbV)	Retention Time (min)	Response (Area)	% RPD from Mean (< 5%)	Std Deviation (Area)	Standard Concentration ppbV	Mean Response (Area)	Calculated Concentration (From Mean) ppbV	Mean % Recovery (+/- 5 %)
0.0	0.000	0	0.0					
0.0	0.000	0	0.0	0	0.0	0	0.0	0.0
0.0	0.000	0	0.0					
10.4	1.936	69	1.0					
10.4	1.927	70	0.5	1	10.4	70	10.3	99.0
10.4	1.955	70	0.5					
259.9	1.931	1734	0.6					
259.9	1.930	1709	0.9	13	259.9	1724	254.6	98.0
259.9	1.929	1728	0.3					
1039.5	1.929	6957	0.4					
1039.5	1.928	6967	0.6	63	1039.5	6926	1022.9	98.4
1039.5	1.930	6854	1.0					
2598.8	1.930	17423	0.3					
2598.8	1.930	17538	0.4	58	2598.8	17476	2581.2	99.3
2598.8	1.928	17468	0.0					
5197.5	1.930	35092	0.5					
5197.5	1.931	35812	1.5	474	5197.5	35274	5209.9	100.2
5197.5	1.929	34919	1.0					
Avg. Ret.	1.932							

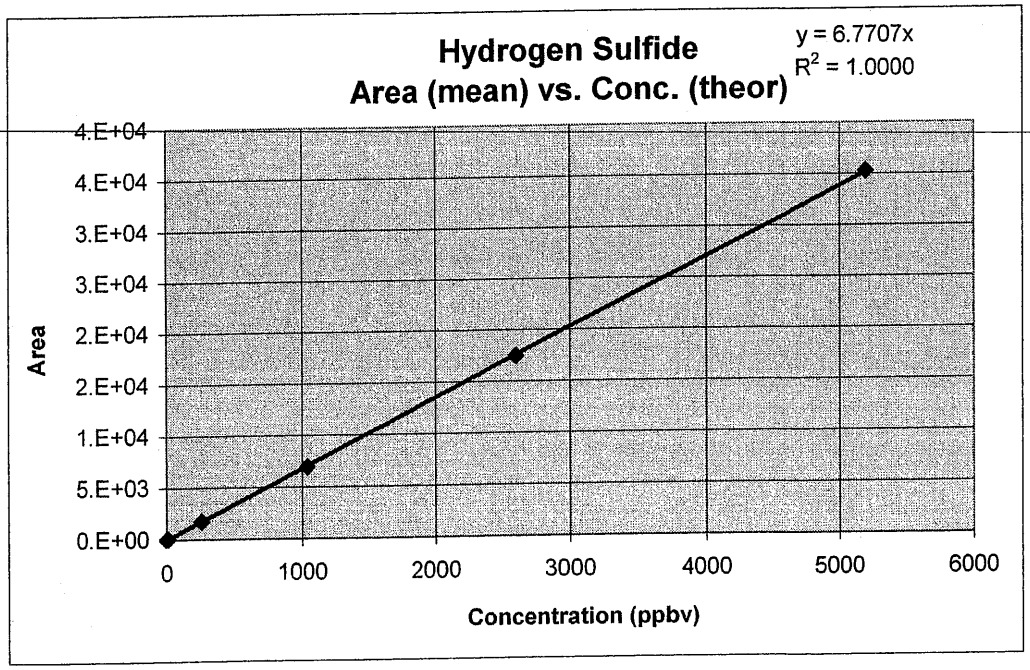
Linear Slope: X = Y / 6.7707
R2 value: 1.0000 *Must be > 0.990*

Calibration Verification Check Standards:
Check Standard Concentration: 519.8 ppbV

H_2S	Resp. (Area)	Result (ppbV)	% Rec *	% RPD
Initial	3576	528.2	101.6	2.2
Duplicate	3461	511.2	98.3	1.1
Triplicate	3459	510.9	98.3	1.1

** All CV's must have +/- 5 % Recovery and < 5% RPD from the Mean*

SCAQMD 307.91/ASTM D-5504 INITIAL CALIBRATION SUMMARY



6/1/21

SCAQMD 307.91 / ASTM D-5504 INITIAL CALIBRATION SUMMARY

Analysis Date: 6/1/2021
Analyst: DL

Standard ID: SS1227
Concentration: 21.08
Units: ppm
Instrument: SCD #10

CALIBRATION CURVE RAW DATA:

Methyl Mercaptan								
MeSH Standard Concentration (ppbV)	Retention Time (min)	Response (Area)	% RPD from Mean (< 5%)	Std Deviation (Area)	Standard Concentration ppbV	Mean Response (Area)	Calculated Concentration (From Mean) ppbV	Mean % Recovery (+/- 5 %)
0.0	0.000	0	0.0					
0.0	0.000	0	0.0	0	0.0	0	0.0	0.0
0.0	0.000	0	0.0					
10.5	3.358	87	0.8					
10.5	3.356	90	2.7	2	10.5	88	10.5	99.2
10.5	3.338	86	1.9					
263.5	3.344	2112	3.0					
263.5	3.347	2186	0.4	62	263.5	2178	259.7	98.6
263.5	3.342	2236	2.7					
1054.0	3.347	8843	0.8					
1054.0	3.347	8744	0.3	62	1054.0	8772	1046.1	99.2
1054.0	3.353	8730	0.5					
2635.0	3.353	22226	0.4					
2635.0	3.351	22155	0.1	116	2635.0	22127	2638.6	100.1
2635.0	3.350	21999	0.6					
Avg. Ret.	3.349							

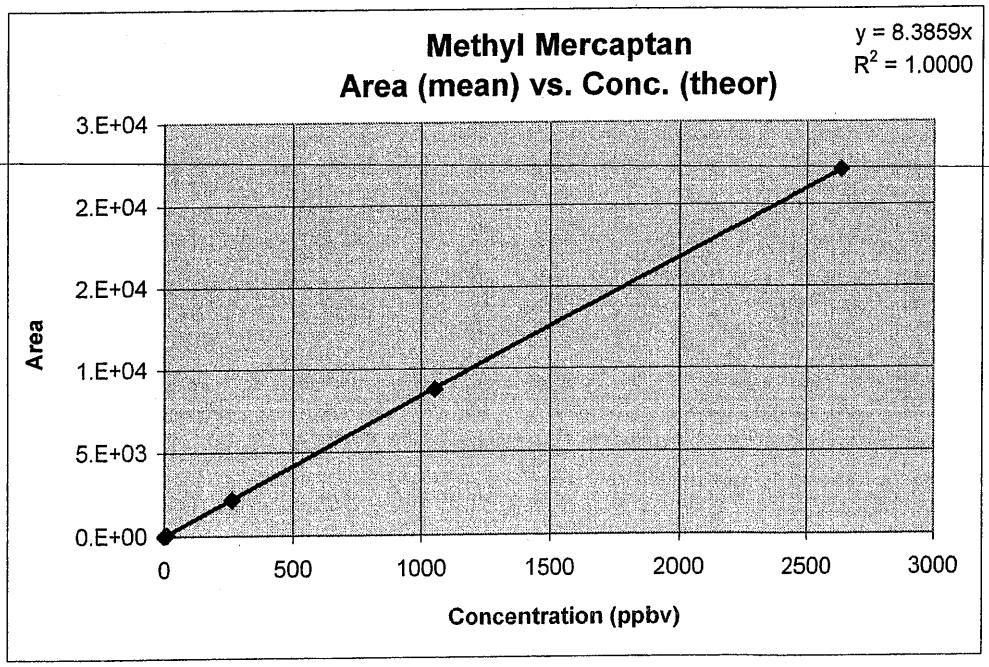
Calibration Verification Check Standards:
Check Standard Concentration: 527.0 ppbV

MeSH	Resp. (Area)	Result (ppbV)	% Rec *	% RPD
Initial	4435	528.9	100.4	0.5
Duplicate	4431	528.4	100.3	0.6
Triplicate	4502	536.9	101.9	1.0

Linear Slope: X = Y / 8.3859
R2 value: 1.0000 *Must be > 0.990*

** All CV's must have +/- 5 % Recovery and < 5% RPD from the Mean*

SCAQMD 307.91/ASTM D-5504 INITIAL CALIBRATION SUMMARY



SCAQMD 307.91 / ASTM D-5504 INITIAL CALIBRATION SUMMARY

Analysis Date: 6/1/2021
Analyst: DL

Standard ID: SS1227
Concentration: 20.88
Units: ppm
Instrument: SCD #10

CALIBRATION CURVE RAW DATA:

Dimethyl Sulfide								
DMS Standard Concentration (ppbV)	Retention Time (min)	Response (Area)	% RPD from Mean (< 5%)	Std Deviation (Area)	Standard Concentration ppbV	Mean Response (Area)	Calculated Concentration (From Mean) ppbV	Mean % Recovery (+/- 5 %)
0.0	0.000	0	0.0					
0.0	0.000	0	0.0	0	0.0	0	0.0	0.0
0.0	0.000	0	0.0					
10.4	6.248	98	0.3					
10.4	6.273	98	0.3	1	10.4	98	10.6	101.1
10.4	6.189	99	0.7					
261.0	6.247	2437	0.3					
261.0	6.244	2488	1.7	39	261.0	2445	262.4	100.5
261.0	6.228	2411	1.4					
1044.0	6.235	9794	0.8					
1044.0	6.235	9690	0.3	70	1044.0	9715	1042.6	99.9
1044.0	6.229	9661	0.6					
2610.0	6.243	24473	0.6					
2610.0	6.243	24300	0.1	137	2610.0	24325	2610.4	100.0
2610.0	6.238	24202	0.5					
Avg. Ret.	6.238							

Calibration Verification Check Standards:

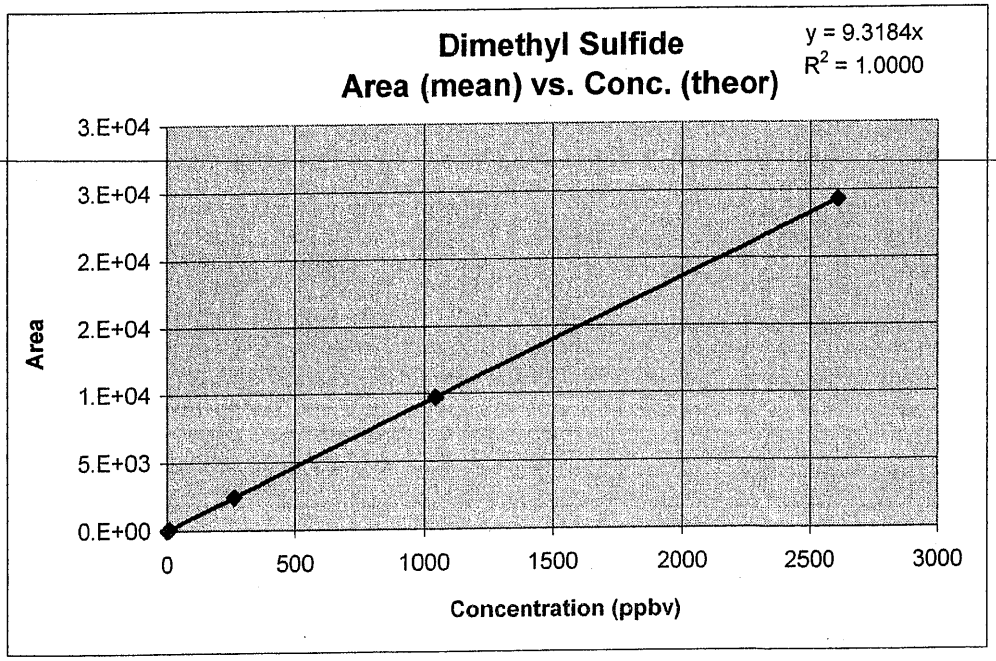
Check Standard Concentration: 522.0 ppbV

DMS	Resp. (Area)	Result (ppbV)	% Rec *	% RPD
Initial	4843	519.7	99.6	0.1
Duplicate	4834	518.8	99.4	0.1
Triplicate	4834	518.8	99.4	0.1

** All CV's must have +/- 5 % Recovery and < 5% RPD from the Mean*

Linear Slope: X = Y / 9.3184
R2 value: 1.0000 *Must be > 0.990*

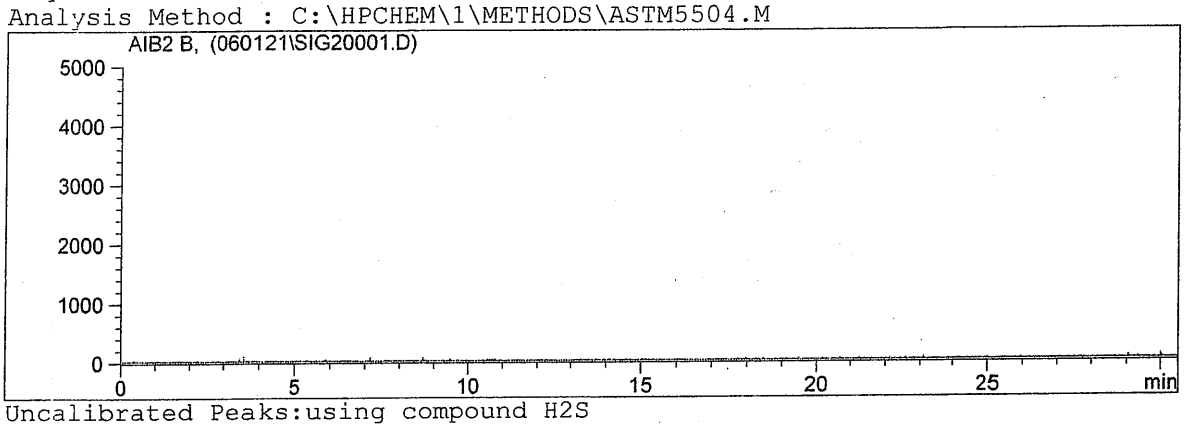
SCAQMD 307.91/ASTM D-5504 INITIAL CALIBRATION SUMMARY



Data file :C:\HPCHEM\1\DATA\060121\SIG20001.D

Customized Report: D5504

Injection Date	: 6/1/2021 5:22:07 AM	Seq. Line	:1
Sample Name	: System Blank		
Inj. Vol.	: Manually		
Multiplier	: 1.00		
Dilution	: 1.00		
Acq Operator	: DL		
Acq. Instrument	: GC/SCD #10		
Acq. Method	: ASTM5504.M		
Analysis Method	: C:\HPCHEM\1\METHODS\ASTM5504.M		



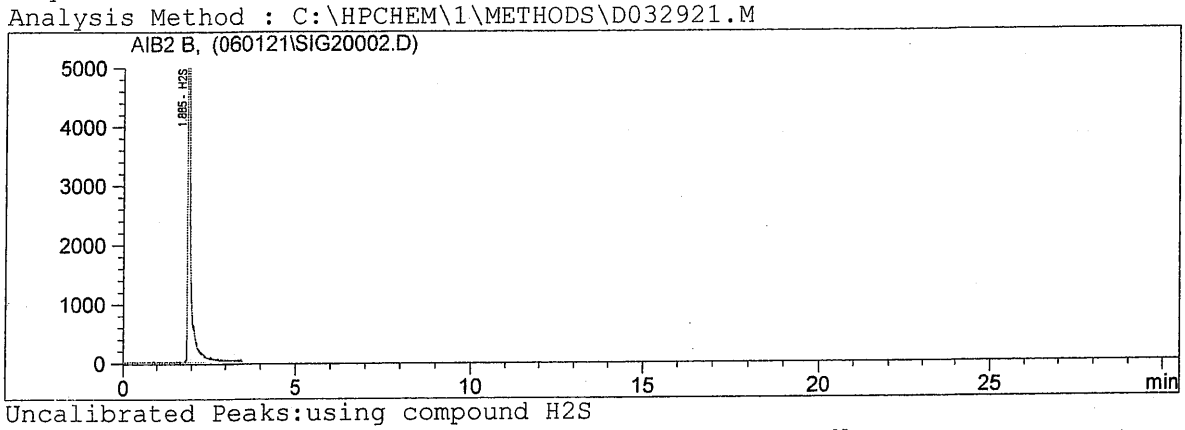
Uncalibrated Peaks:using compound H2S

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\060121\SIG20002.D

Customized Report: D5504

Injection Date : 6/1/2021 6:03:53 AM Seq. Line :2
Sample Name : H2S Primer 20 ppm SS1284x1
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.885	111035	15932.747	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		15932.747	

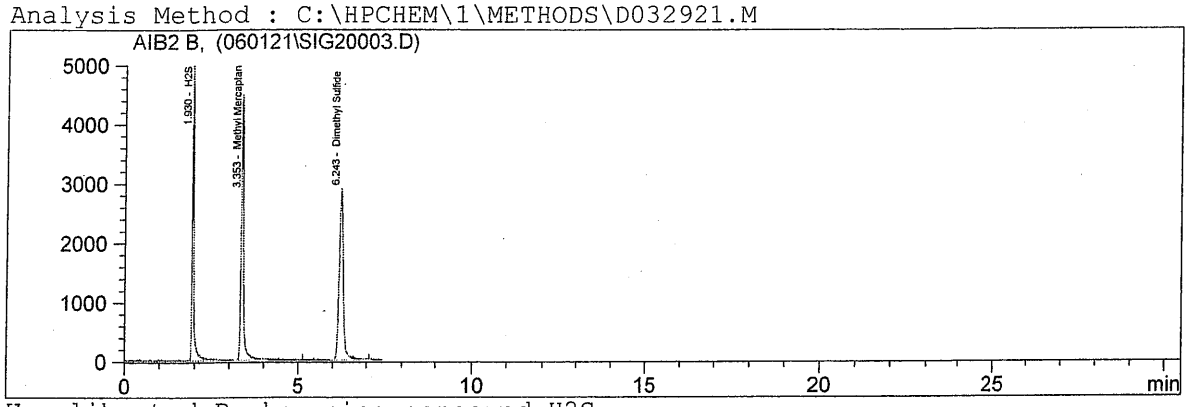
*** End of Report ***

6/1/21

Data file :C:\HPCHEM\1\DATA\060121\SIG20003.D

Customized Report: D5504

Injection Date : 6/1/2021 6:14:54 AM Seq. Line :3
Sample Name : 2500 ppbV H2S/MeSH/DMS (SS1289x8)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.930	17423	2500.024	H2S
0.000	0	0.000	COS / SO2
3.353	22226	2650.642	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.243	24473	2394.485	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		7545.151	

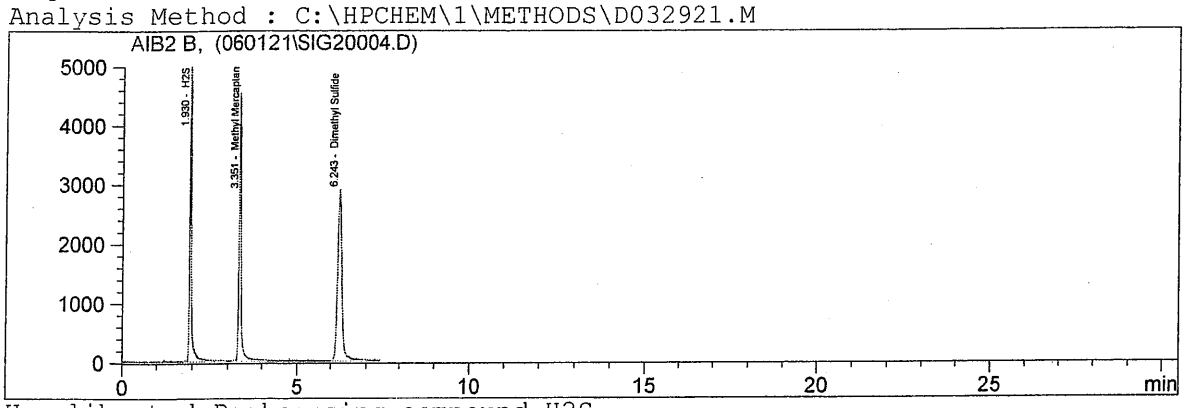
*** End of Report ***

6/1/21

Data file :C:\HPCHEM\1\DATA\060121\SIG20004.D

Customized Report: D5504

Injection Date : 6/1/2021 6:24:32 AM Seq. Line :4
Sample Name : 2500 ppbV dp H2S/MeSH/DMS (SS1289x8)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

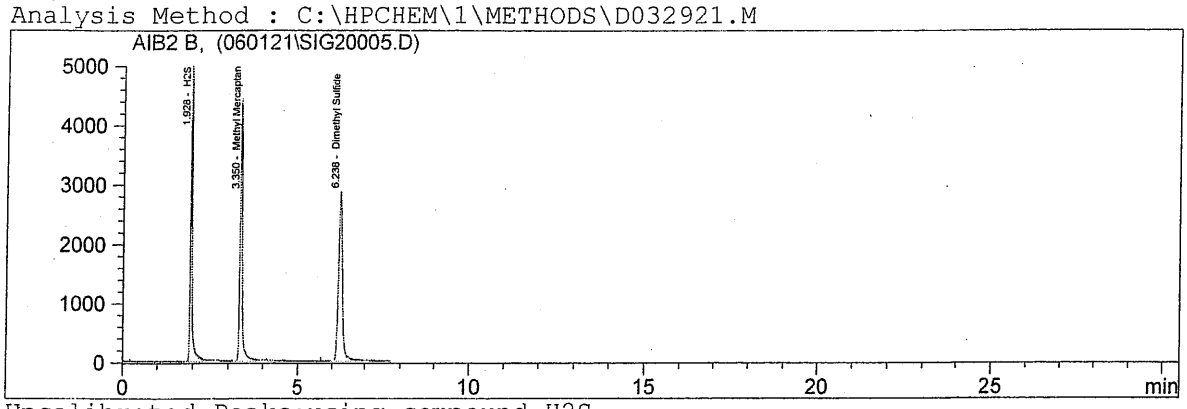
Ret Time [min]	Area	Amount [ppbV]	Name
1.930	17538	2516.583	H2S
0.000	0	0.000	COS / SO2
3.351	22155	2642.099	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.243	24300	2377.514	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		7536.197	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\060121\SIG20005.D

Customized Report: D5504

Injection Date : 6/1/2021 6:34:13 AM Seq. Line :5
Sample Name : 2500 ppbV tp H2S/MeSH/DMS (SS1289x8)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

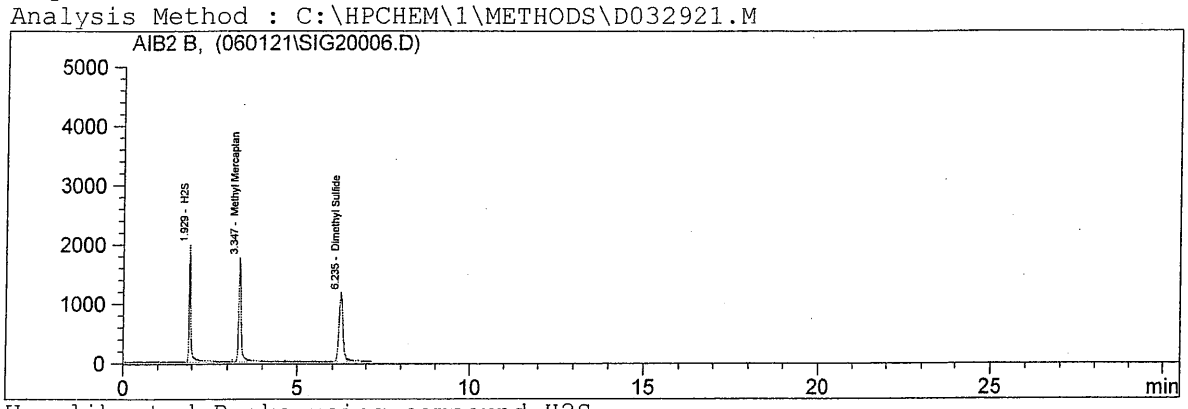
Ret Time [min]	Area	Amount [ppbV]	Name
1.928	17468	2506.524	H2S
0.000	0	0.000	COS / SO2
3.350	21999	2623.495	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.238	24202	2367.977	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		7497.996	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\060121\SIG20006.D

Customized Report: D5504

Injection Date : 6/1/2021 7:10:58 AM Seq. Line :6
Sample Name : 1000 ppbV H2S/MeSH/DMS (SS1289x20)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.929	6957	998.286	H2S
0.000	0	0.000	COS / SO2
3.347	8843	1054.568	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.235	9794	958.212	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		3011.066	

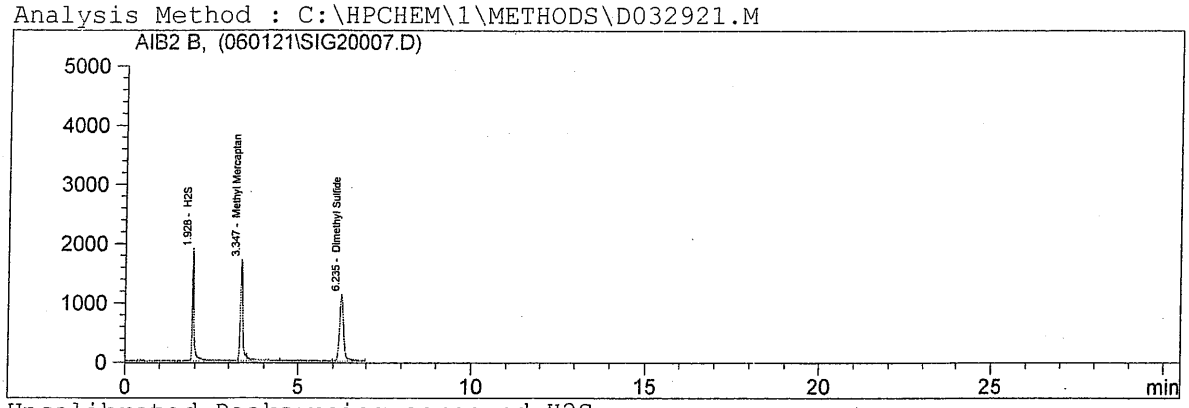
*** End of Report ***

6/1/21

Data file :C:\HPCHEM\1\DATA\060121\SIG20007.D

Customized Report: D5504

Injection Date : 6/1/2021 7:20:29 AM Seq. Line :7
Sample Name : 1000 ppbV dp H2S/MeSH/DMS (SS1289x20)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

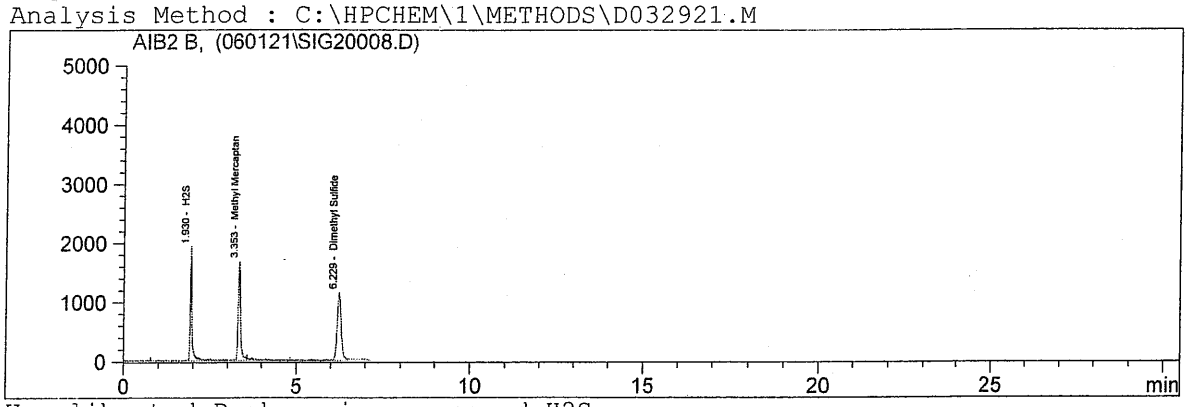
Ret Time [min]	Area	Amount [ppbV]	Name
1.928	6967	999.715	H2S
0.000	0	0.000	COS / SO2
3.347	8744	1042.789	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.235	9690	948.097	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		2990.601	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\060121\SIG20008.D

Customized Report: D5504

Injection Date : 6/1/2021 7:29:49 AM Seq. Line :8
Sample Name : 1000 ppbV tp H2S/MeSH/DMS (SS1289x20)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.930	6854	983.536	H2S
0.000	0	0.000	COS / SO2
3.353	8730	1041.118	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.229	9661	945.286	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		2969.940	

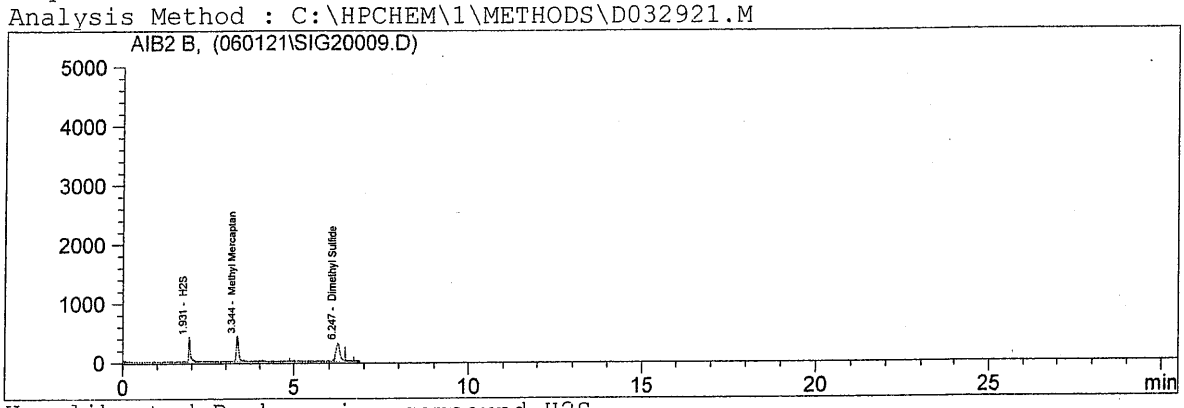
*** End of Report ***

6/1/21

Data file :C:\HPCHEM\1\DATA\060121\SIG20009.D

Customized Report: D5504

Injection Date : 6/1/2021 7:45:08 AM Seq. Line :9
Sample Name : 250 ppbV H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.931	1734	248.795	H2S
0.000	0	0.000	COS / SO2
3.344	2112	251.923	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.247	2437	238.403	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		739.121	

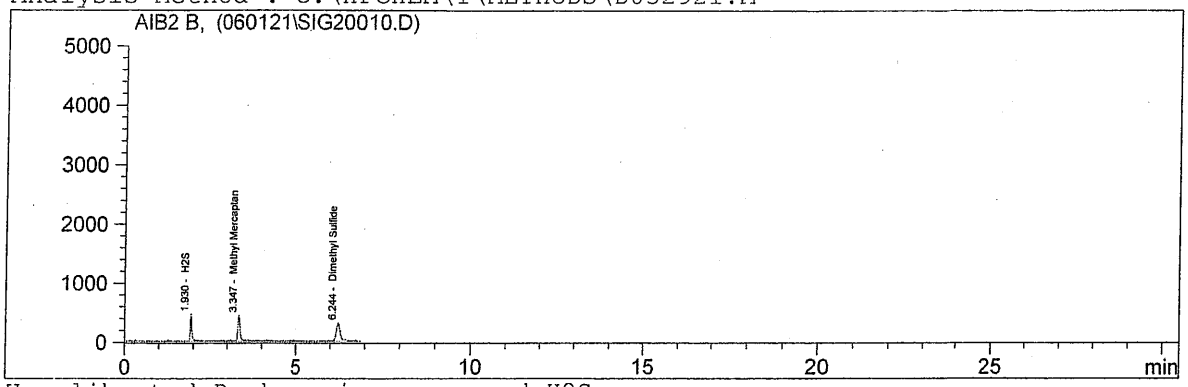
*** End of Report ***

6/1/21

Data file :C:\HPCHEM\1\DATA\060121\SIG20010.D

Customized Report: D5504

Injection Date : 6/1/2021 7:54:42 AM Seq. Line :10
Sample Name : 250 ppbV dp H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.930	1709	245.180	H2S
0.000	0	0.000	COS / SO2
3.347	2186	260.643	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.244	2488	243.437	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		749.260	

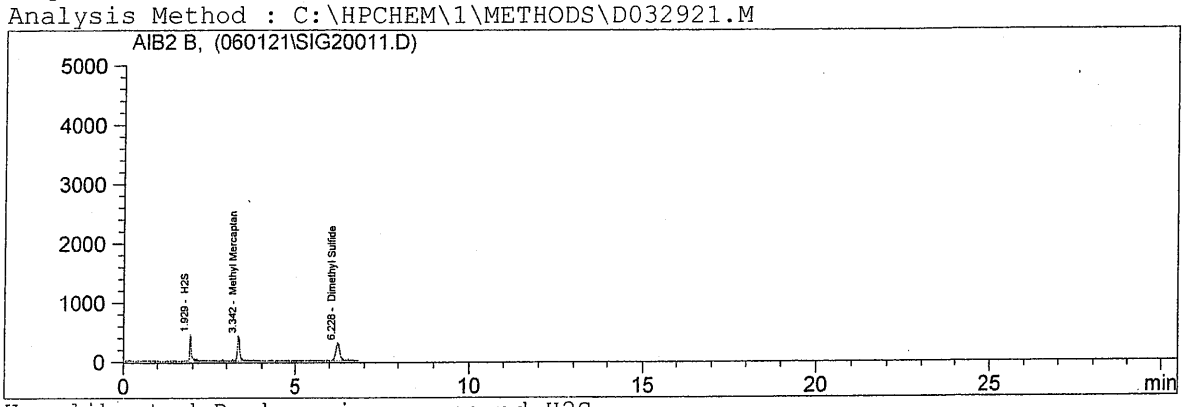
*** End of Report ***

6/1/21

Data file :C:\HPCHEM\1\DATA\060121\SIG20011.D

Customized Report: D5504

Injection Date : 6/1/2021 8:11:06 AM Seq. Line :11
Sample Name : 250 ppbV tp H2S/MeSH/DMS (SS1289x80)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.929	1728	247.940	H2S
0.000	0	0.000	COS / SO2
3.342	2236	266.643	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.228	2411	235.899	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		750.483	

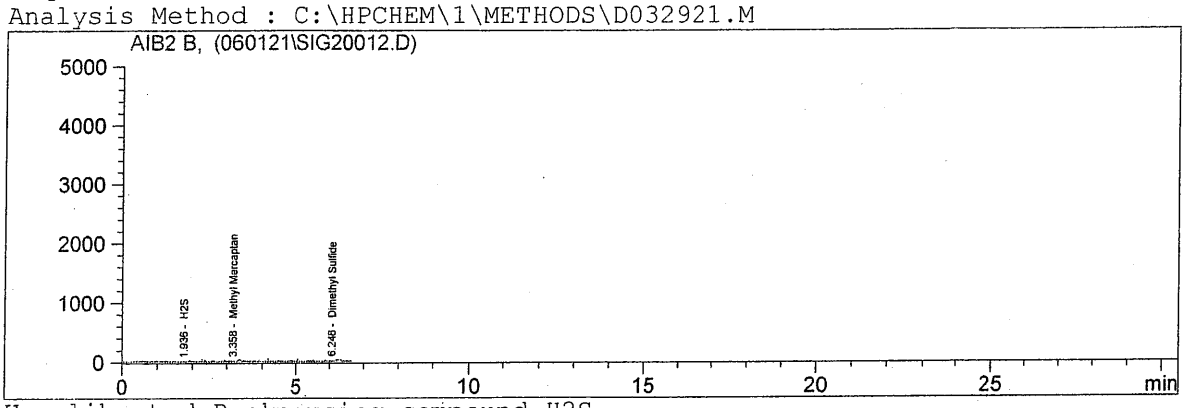
*** End of Report ***

6/8/21

Data file :C:\HPCHEM\1\DATA\060121\SIG20012.D

Customized Report: D5504

Injection Date : 6/1/2021 8:27:40 AM Seq. Line :12
Sample Name : 10 ppbV H2S/MeSH/DMS (SS1289x2000)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.936	69	9.938	H2S
0.000	0	0.000	COS / SO2
3.358	87	10.403	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.248	98	9.602	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		29.942	

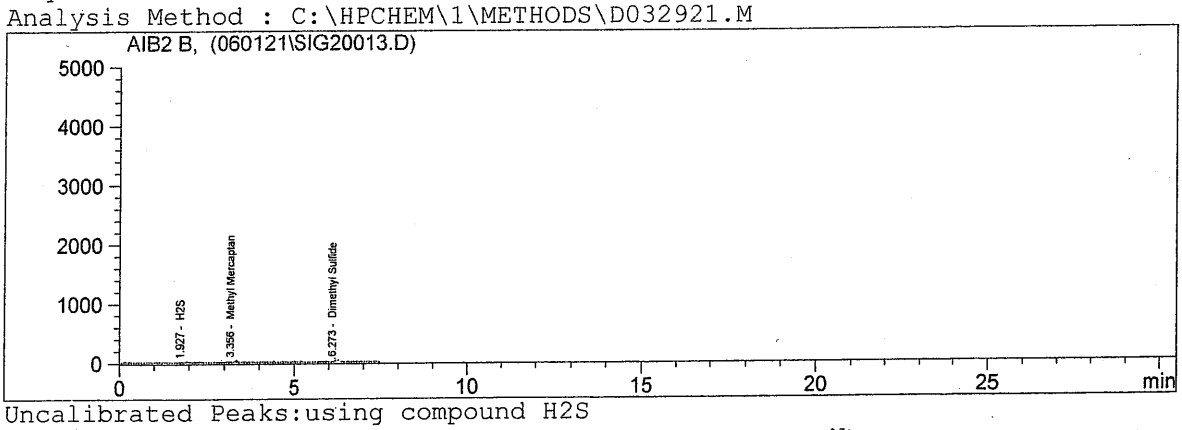
*** End of Report ***

6/1/21

Data file :C:\HPCHEM\1\DATA\060121\SIG20013.D

Customized Report: D5504

Injection Date : 6/1/2021 8:39:04 AM Seq. Line :13
Sample Name : 10 ppbV dp H2S/MeSH/DMS (SS1289x2000)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.927	70	10.018	H2S
0.000	0	0.000	COS / SO2
3.356	90	10.700	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.273	98	9.621	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		30.339	

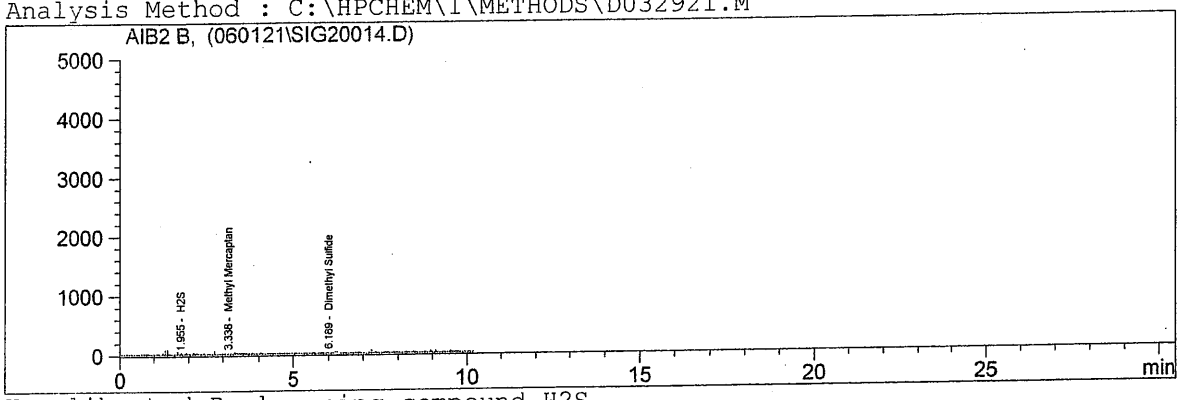
*** End of Report ***

6/1/21

Data file :C:\HPCHEM\1\DATA\060121\SIG20014.D

Customized Report: D5504

Injection Date : 6/1/2021 8:50:16 AM Seq. Line :14
Sample Name : 10 ppbV tp H2S/MeSH/DMS (SS1289x2000)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.955	70	9.978	H2S
0.000	0	0.000	COS / SO2
3.338	86	10.240	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.189	99	9.703	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		29.922	

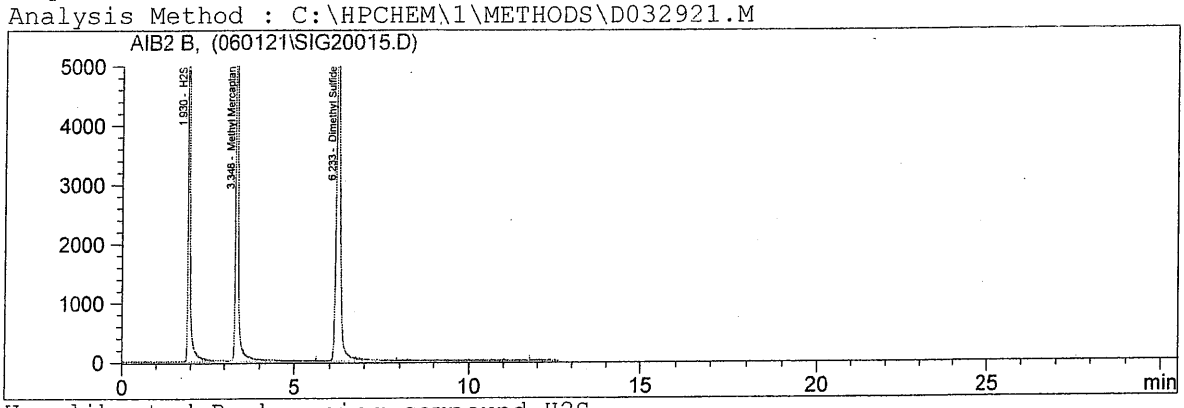
*** End of Report ***

6/1/21

Data file :C:\HPCHEM\1\DATA\060121\SIG20015.D

Customized Report: D5504

Injection Date : 6/1/2021 9:06:09 AM Seq. Line :15
Sample Name : 5000 ppbV H2S/MeSH/DMS (SS1289x4)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

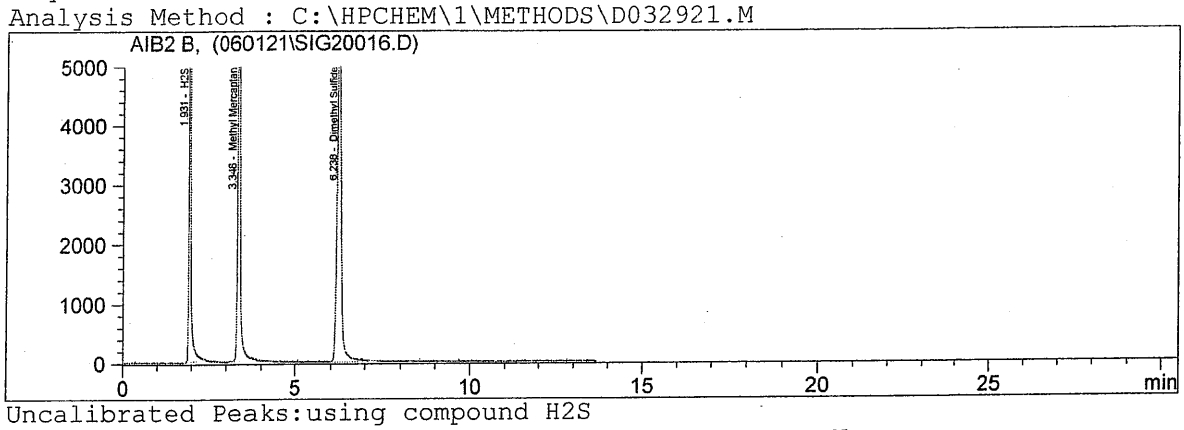
Ret Time [min]	Area	Amount [ppbV]	Name
1.930	35092	5035.507	H2S
0.000	0	0.000	COS / SO2
3.348	43001	5128.089	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.233	47115	4609.789	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		14773.385	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\060121\SIG20016.D

Customized Report: D5504

Injection Date : 6/1/2021 9:22:09 AM Seq. Line :16
Sample Name : 5000 ppbV dp H2S/MeSH/DMS (SS1289x4)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

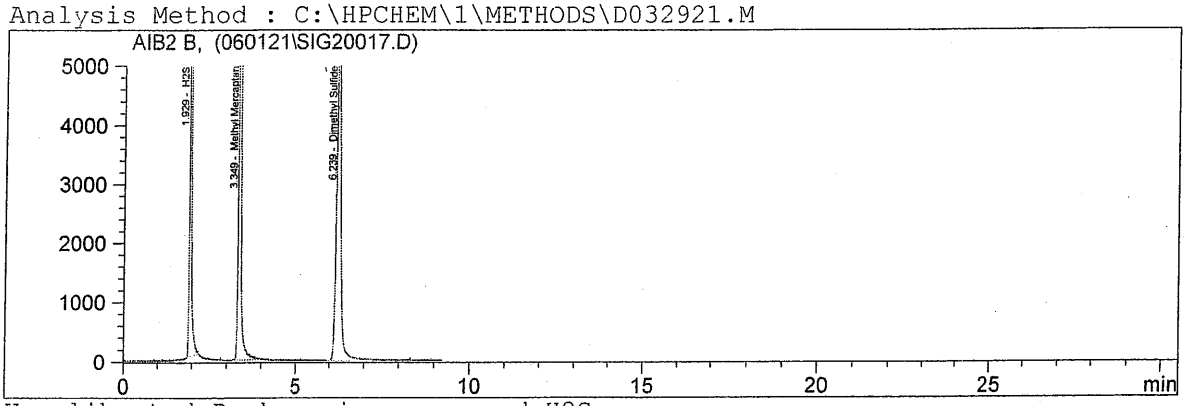
Ret Time [min]	Area	Amount [ppbV]	Name
1.931	35812	5138.735	H2S
0.000	0	0.000	COS / SO2
3.348	44560	5314.062	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.238	48019	4698.259	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		15151.056	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\060121\SIG20017.D

Customized Report: D5504

Injection Date : 6/1/2021 9:39:15 AM Seq. Line :17
Sample Name : 5000 ppbV tp H2S/MeSH/DMS (SS1289x4)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

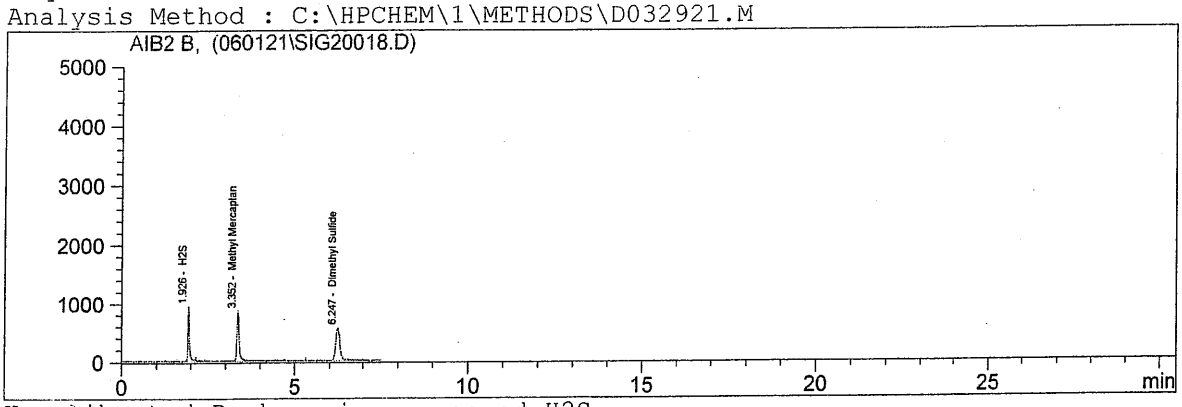
Ret Time [min]	Area	Amount [ppbV]	Name
1.929	34919	5010.641	H2S
0.000	0	0.000	COS / SO2
3.349	44866	5350.569	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.239	48740	4768.755	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		15129.964	

*** End of Report ***

Data file :C:\HPCHEM\1\DATA\060121\SIG20018.D

Customized Report: D5504

Injection Date : 6/1/2021 10:07:21 AM Seq. Line :18
Sample Name : CCV 500 ppbV H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.926	3576	513.173	H2S
0.000	0	0.000	COS / SO2
3.352	4435	528.932	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.247	4843	473.852	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1515.958	

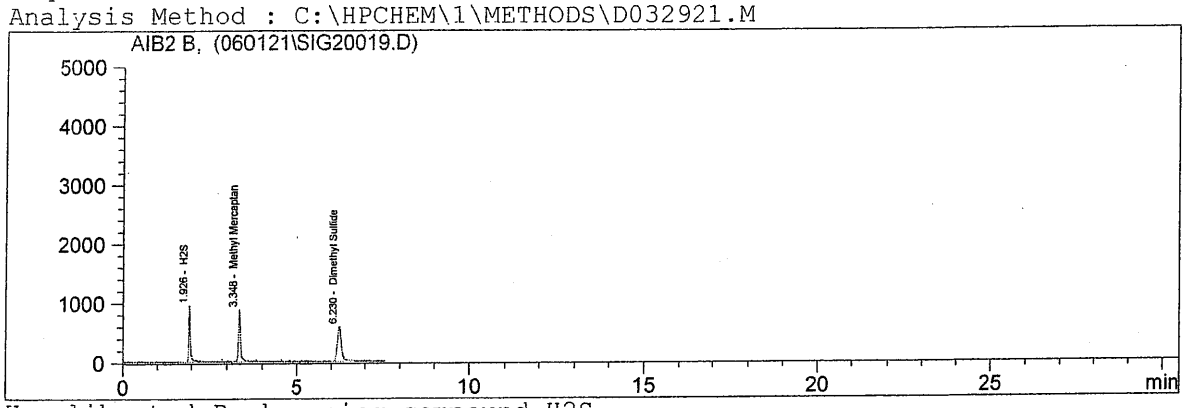
*** End of Report ***

n/a

Data file :C:\HPCHEM\1\DATA\060121\SIG20019.D

Customized Report: D5504

Injection Date : 6/1/2021 10:17:33 AM Seq. Line :19
Sample Name : CCV 500 ppbV dp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.926	3461	496.565	H2S
0.000	0	0.000	COS / SO2
3.348	4431	528.478	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.230	4834	472.943	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1497.987	

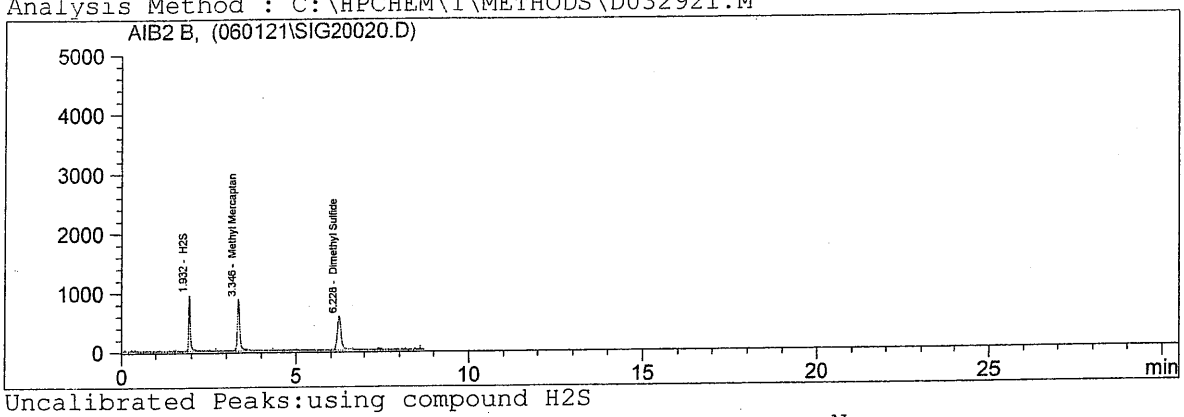
*** End of Report ***

6/1/21

Data file :C:\HPCHEM\1\DATA\060121\SIG20020.D

Customized Report: D5504

Injection Date : 6/1/2021 10:27:33 AM Seq. Line :20
Sample Name : CCV 500 ppbV tp H2S/MeSH/DMS (SS1289x40)
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D032921.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
1.932	3459	496.278	H2S
0.000	0	0.000	COS / SO2
3.346	4502	536.869	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.228	4834	472.991	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		1506.138	

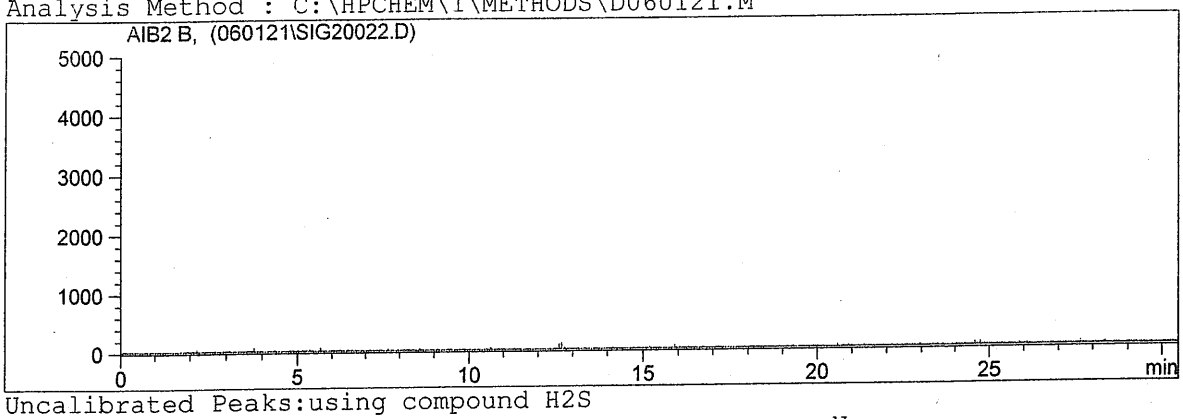
*** End of Report ***

6/1/21

Data file :C:\HPCHEM\1\DATA\060121\SIG20022.D

Customized Report: D5504

Injection Date : 6/1/2021 10:52:01 AM Seq. Line :22
Sample Name : Method Blank
Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DL
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D060121.M



Uncalibrated Peaks:using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
Totals:		0.000	

*** End of Report ***

6/1/21

SCAQMD 307.91 / ASTM D-5504 INITIAL CALIBRATION SUMMARY

Analysis Date: 7/5/2021
Analyst: DL

Standard ID: SS1289
Concentration: 20.79
Units: ppm
Instrument: GC-BTU-SCD

CALIBRATION CURVE RAW DATA:

Hydrogen Sulfide								
H_2S Standard Concentration (ppmV)	Retention Time (min)	Response (Area)	% RPD from Mean (< 5%)	Std Deviation (Area)	Standard Concentration ppmV	Mean Response (Area)	Calculated Concentration (From Mean) ppmV	Mean % Recovery (+/- 5 %)
0.000	0.000	0	0.0					
0.000	0.000	0	0.0	0	0.000	0	0.000	0.0
0.000	0.000	0	0.0					
0.052	1.868	49	0.3					
0.052	1.866	49	0.6	0	0.052	49	0.052	99.2
0.052	1.868	49	0.3					
0.520	1.868	482	0.9					
0.520	1.870	490	0.7	4	0.520	487	0.514	98.9
0.520	1.863	488	0.2					
4.158	1.872	3795	2.3					
4.158	1.869	3868	0.4	99	4.158	3884	4.102	98.6
4.158	1.872	3990	2.7					
10.395	1.869	9882	0.2					
10.395	1.870	9952	0.9	96	10.395	9865	10.418	100.2
10.395	1.870	9762	1.0					
Avg. Ret.	1.869							

Calibration Verification Check Standards:

Check Standard Concentration: 0.520 ppmV

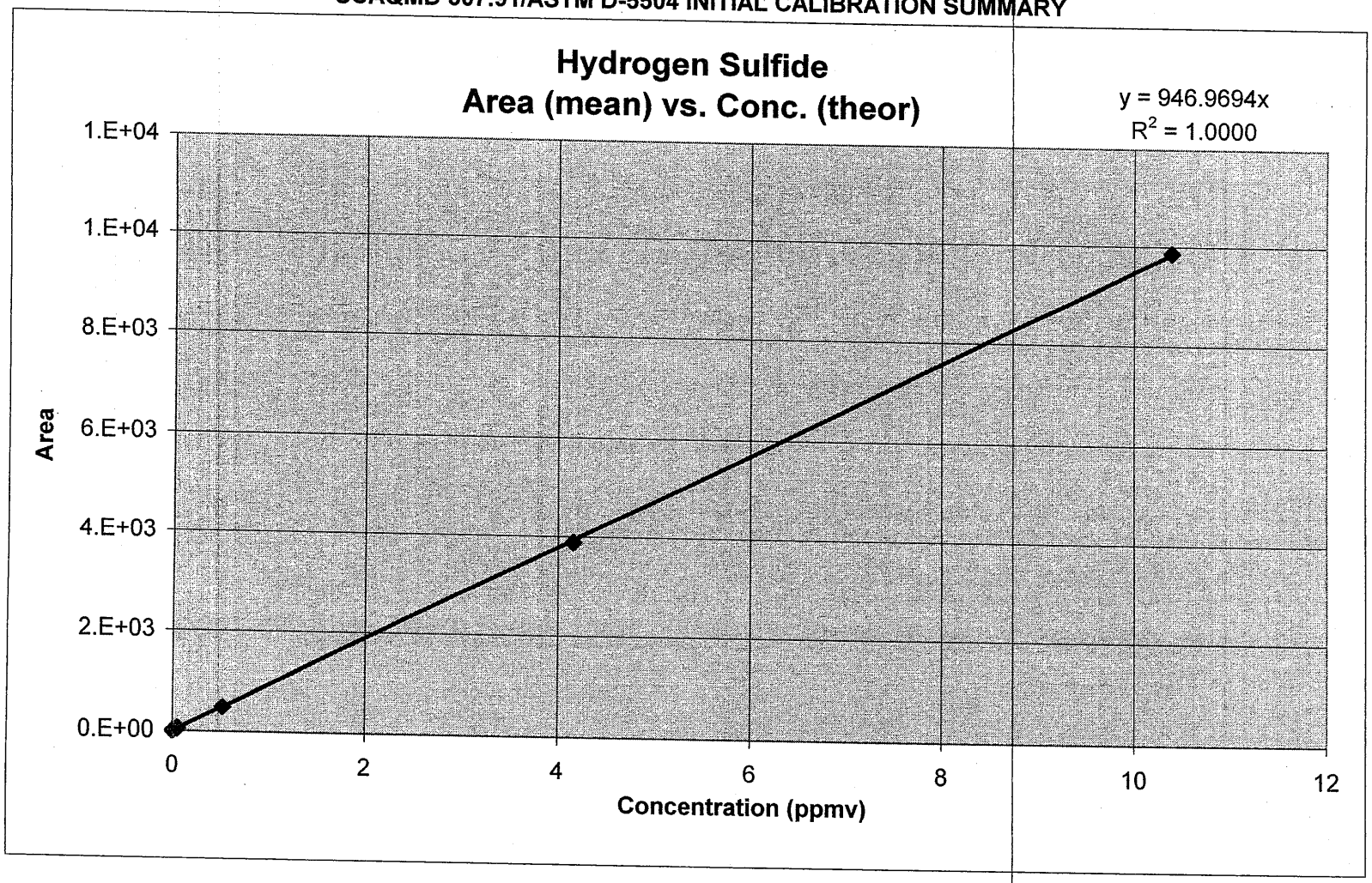
H_2S	Resp. (Area)	Result (ppmV)	% Rec *	% RPD
Initial	491	0.519	99.8	2.3
Duplicate	474	0.500	96.3	1.3
Triplicate	476	0.503	96.7	0.9

** All CV's must have +/- 5 % Recovery and < 5% RPD from the Mean*

Linear Slope: X = Y / 946.9694
R2 value: 1.0000 *Must be > 0.990*

Laboratory Director (signature/date) 7/22/21

SCAQMD 307.91/ASTM D-5504 INITIAL CALIBRATION SUMMARY



SCAQMD 307.91 / ASTM D-5504 INITIAL CALIBRATION SUMMARY

Analysis Date: 7/5/2021
Analyst: DL

Standard ID: SS1289
Concentration: 21.08
Units: ppm
Instrument: GC-BTU-SCD

CALIBRATION CURVE RAW DATA:

Methyl Mercaptan								
MeSH Standard Concentration (ppmV)	**Retention Time (min)**	**Response (Area)**	**% RPD from Mean (< 5%)**	**Std Deviation (Area)**	**Standard Concentration ppmV**	**Mean Response (Area)**	**Calculated Concentration (From Mean) ppmV**	**Mean % Recovery (+/- 5 %)**
0.000	0.000	0	0.0					
0.000	0.000	0	0.0	0	0.000	0	0.000	0.0
0.000	0.000	0	0.0					
0.053	3.322	53	1.5					
0.053	3.319	54	0.0	1	0.053	54	0.052	99.1
0.053	3.316	55	1.5					
0.527	3.316	540	1.2					
0.527	3.316	552	1.1	6	0.527	547	0.526	99.8
0.527	3.320	547	0.1					
4.216	3.322	4415	0.3					
4.216	3.320	4369	0.7	29	4.216	4402	4.235	100.4
4.216	3.322	4421	0.4					
10.540	3.320	10967	0.2					
10.540	3.320	10988	0.4	52	10.540	10948	10.533	99.9
10.540	3.319	10889	0.5					
Avg. Ret.	3.319							

Calibration Verification Check Standards:

Check Standard Concentration: 0.527 ppmV

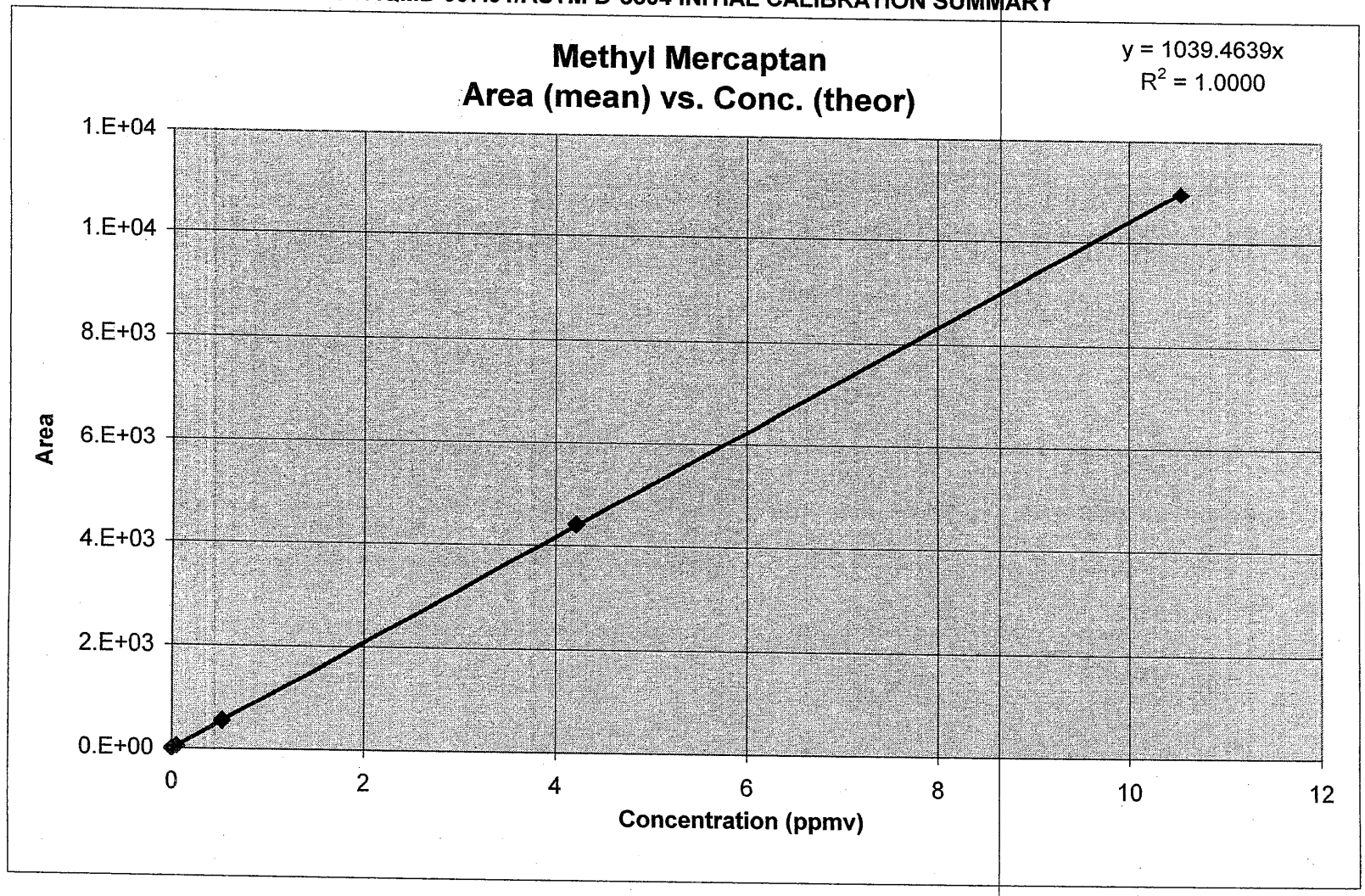
MeSH	Resp. (Area)	Result (ppmV)	% Rec *	% RPD
Initial	538	0.517	98.2	0.1
Duplicate	523	0.503	95.4	2.9
Triplicate	554	0.533	101.1	2.9

** All CV's must have +/- 5 % Recovery and < 5% RPD from the Mean*

Linear Slope: X = Y / 1039.4639
R2 value: 1.0000 *Must be > 0.990*

7/22/24
Laboratory Director (signature/date)

SCAQMD 307.91/ASTM D-5504 INITIAL CALIBRATION SUMMARY



SCAQMD 307.91 / ASTM D-5504 INITIAL CALIBRATION SUMMARY

Analysis Date: 7/5/2021
Analyst: DL

Standard ID: SS1289
Concentration: 20.88
Units: ppm
Instrument: GC-BTU-SCD

CALIBRATION CURVE RAW DATA:

Dimethyl Sulfide								
DMS Standard Concentration (ppmV)	Retention Time (min)	Response (Area)	% RPD from Mean (< 5%)	Std Deviation (Area)	Standard Concentration ppmV	Mean Response (Area)	Calculated Concentration (From Mean) ppmV	Mean % Recovery (+/- 5 %)
0.000	0.000	0	0.0					
0.000	0.000	0	0.0	0	0.000	0	0.000	0.0
0.000	0.000	0	0.0					
0.052	6.259	54	0.2					
0.052	6.285	55	0.6	0	0.052	54	0.052	99.5
0.052	6.306	54	0.4					
0.522	6.271	544	0.4					
0.522	6.274	538	1.5	9	0.522	546	0.522	100.0
0.522	6.269	556	1.9					
4.176	6.271	4445	0.9					
4.176	6.274	4364	0.9	40	4.176	4404	4.214	100.9
4.176	6.274	4403	0.0					
10.440	6.274	10805	0.8					
10.440	6.267	10896	0.0	88	10.440	10894	10.425	99.9
10.440	6.265	10982	0.8					
Avg. Ret.	6.274							

Calibration Verification Check Standards:

Check Standard Concentration: 0.522 ppmV

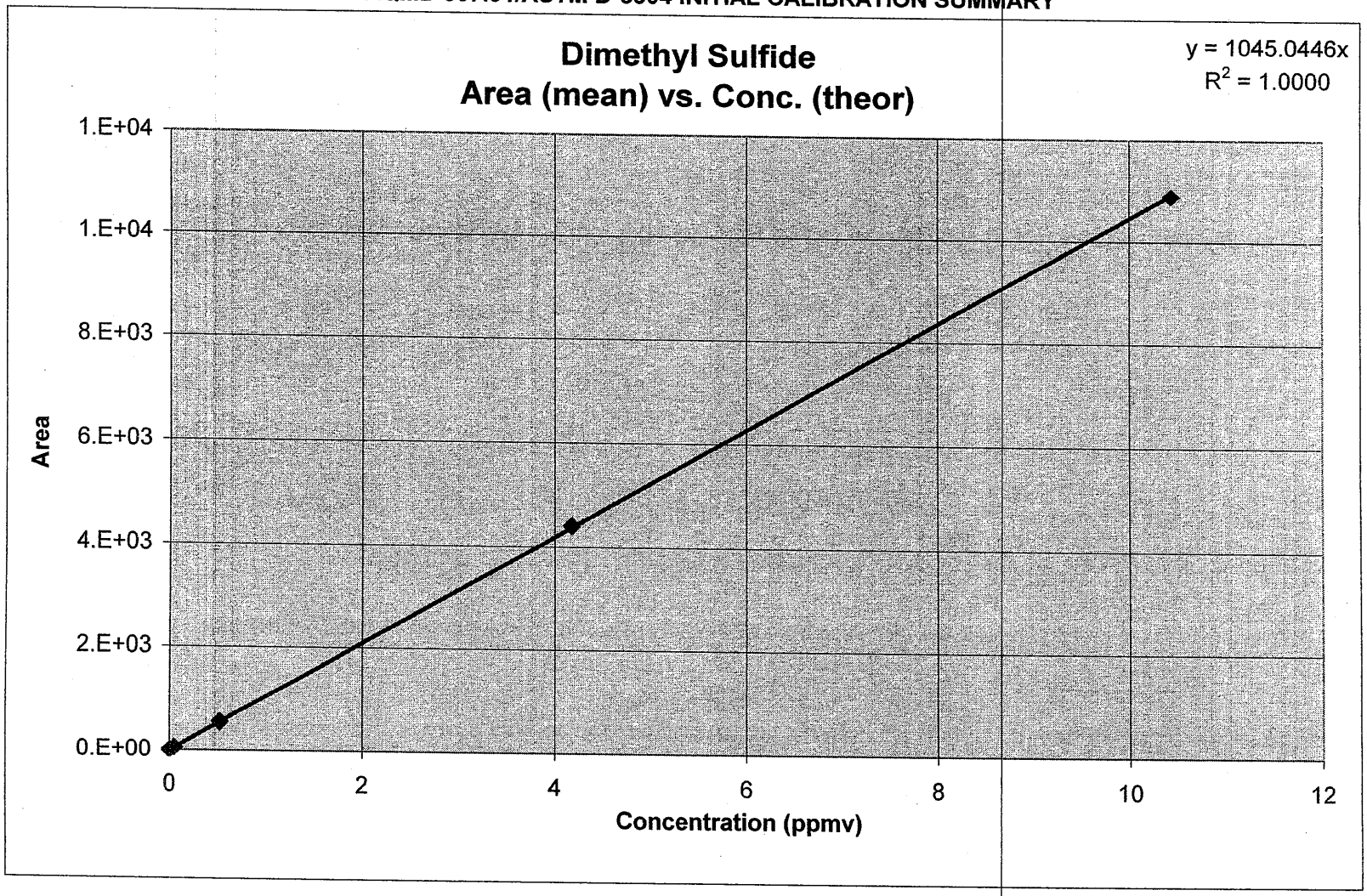
DMS	Resp. (Area)	Result (ppmV)	% Rec *	% RPD
Initial	551	0.527	101.0	0.4
Duplicate	554	0.530	101.5	0.8
Triplicate	542	0.519	99.4	1.2

** All CV's must have +/- 5 % Recovery and < 5% RPD from the Mean*

Linear Slope: X = Y / 1045.0446
R2 value: 1.0000 *Must be > 0.990*

7/22/21
Laboratory Director (signature/date)

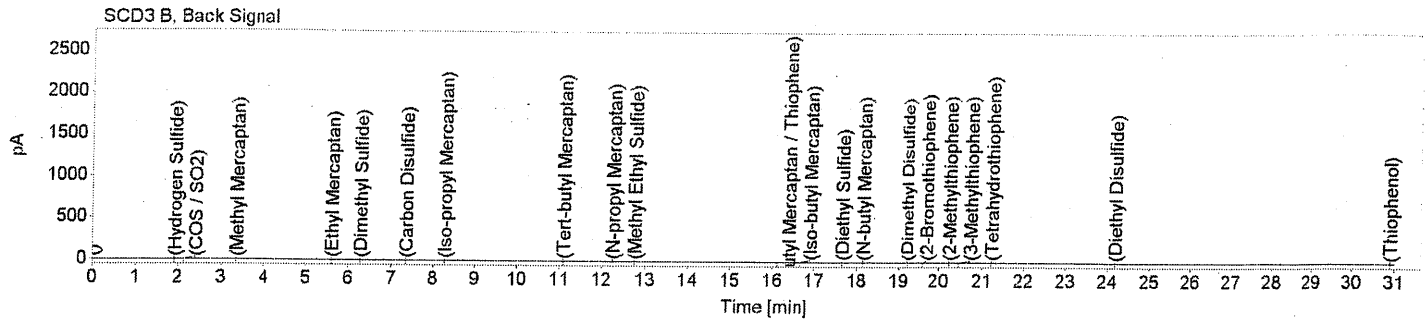
SCAQMD 307.91/ASTM D-5504 INITIAL CALIBRATION SUMMARY



TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\001B0101.D
Injection date: 7/5/2021 6:36:56 AM
Sample name: System Blank
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
0.000	0	0.000	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.000	

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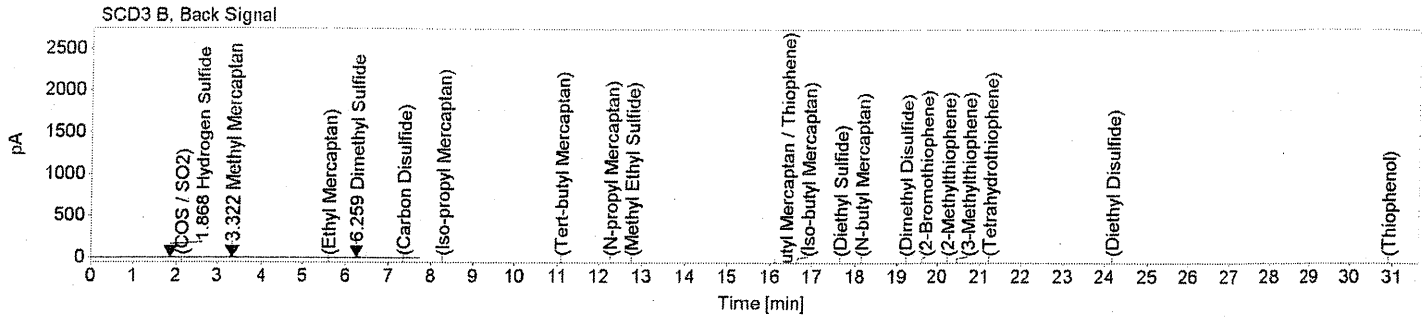
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\014B1401.D
Injection date: 7/5/2021 10:42:35 AM
Sample name: 50 ppbV H2S/MeSH/DMS (SS1289x400)
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.868	48.96	0.018	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.322	53.47	0.020	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.259	54.19	0.020	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.058	

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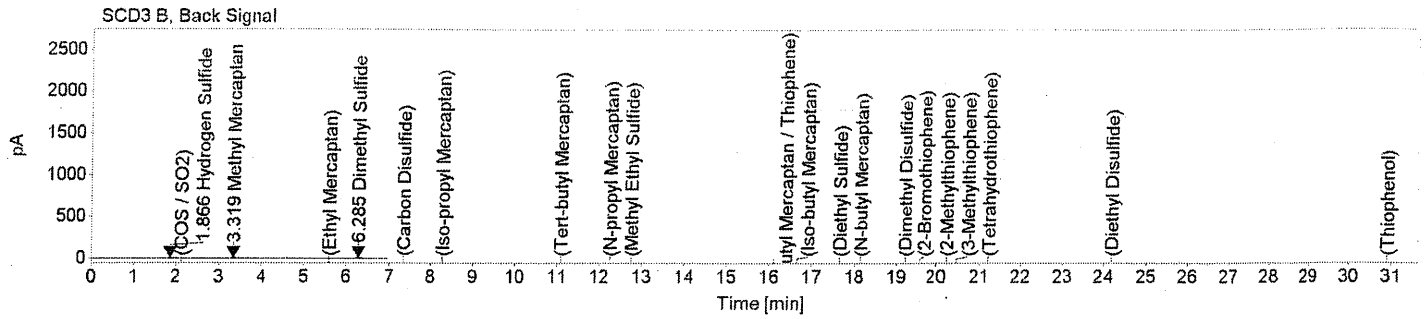
TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\015B1501.D
Injection date: 7/5/2021 10:54:02 AM
Sample name: 50 ppbV H2S/MeSH/DMS (SS1289x400) dp
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

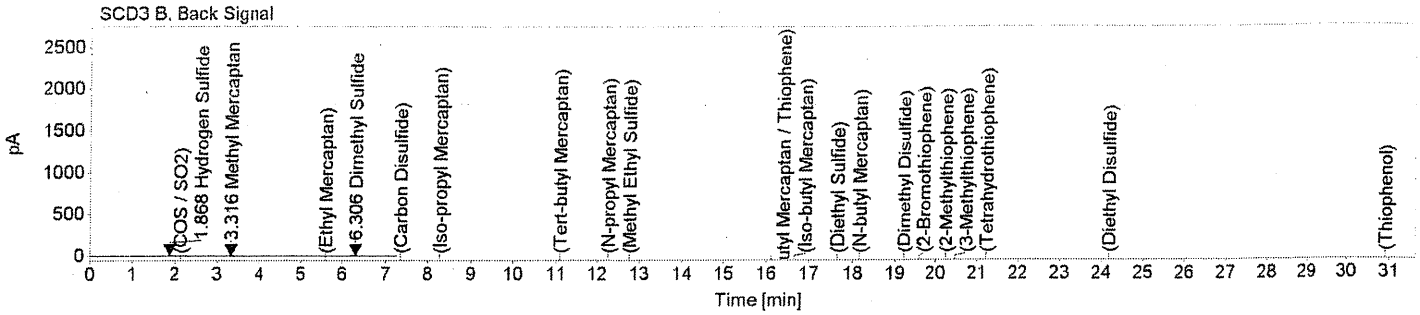
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.866	48.99	0.018	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.319	55.12	0.021	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.285	54.1	0.019	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.059	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\016B1601.D
Injection date: 7/5/2021 11:03:40 AM
Sample name: 50 ppbV H2S/MeSH/DMS (SS1289x400) tp
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

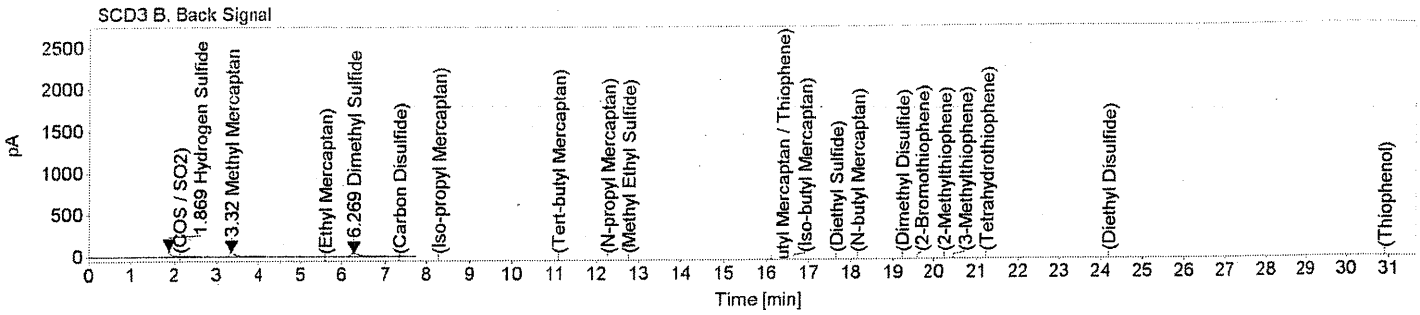
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.868	48.56	0.018	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.316	54.26	0.020	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.306	54.6	0.020	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.058	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\017B1701.D
Injection date: 7/5/2021 11:19:20 AM
Sample name: 500 ppbV CCV H2S/MeSH/DMS (SS1289x40)
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

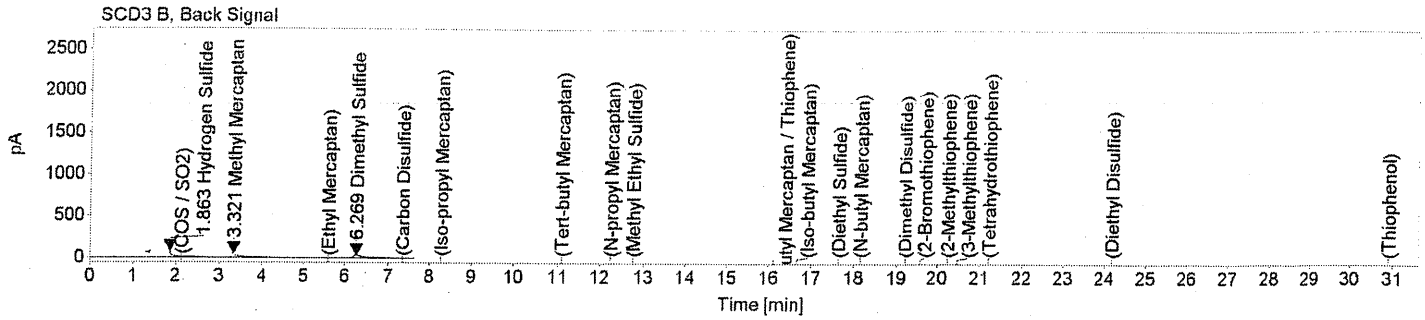
RT [min]	Area	Amount [ppm]	Name
1.869	491.25	0.185	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.320	537.87	0.200	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.269	551.13	0.199	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.584	

7/5/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\018B1801.D
Injection date: 7/5/2021 11:30:34 AM
Sample name: 500 ppbV CCV H2S/MeSH/DMS (SS1289x40) dp
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

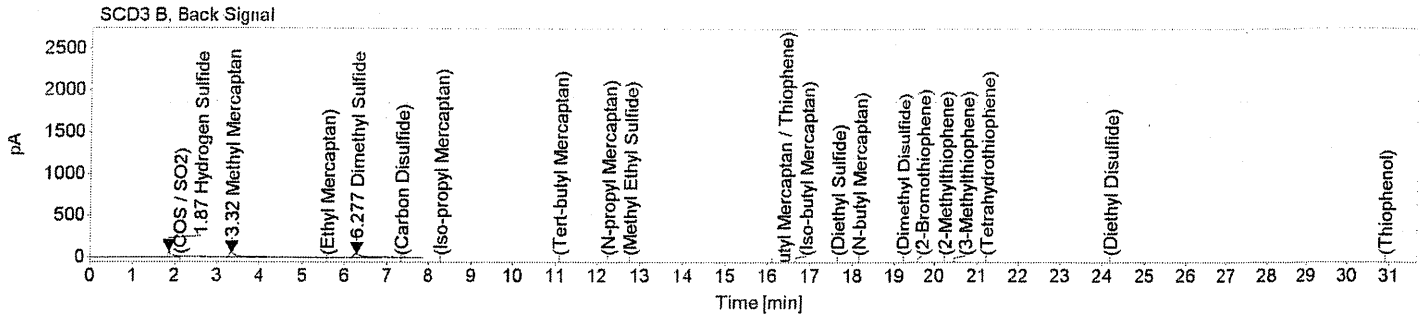
RT [min]	Area	Amount [ppm]	Name
1.863	473.94	0.179	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.321	522.81	0.195	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.269	553.53	0.199	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.573	

h 7/5/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\019B1901.D
Injection date: 7/5/2021 11:41:01 AM
Sample name: 500 ppbV CCV H2S/MeSH/DMS (SS1289x40) tp
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

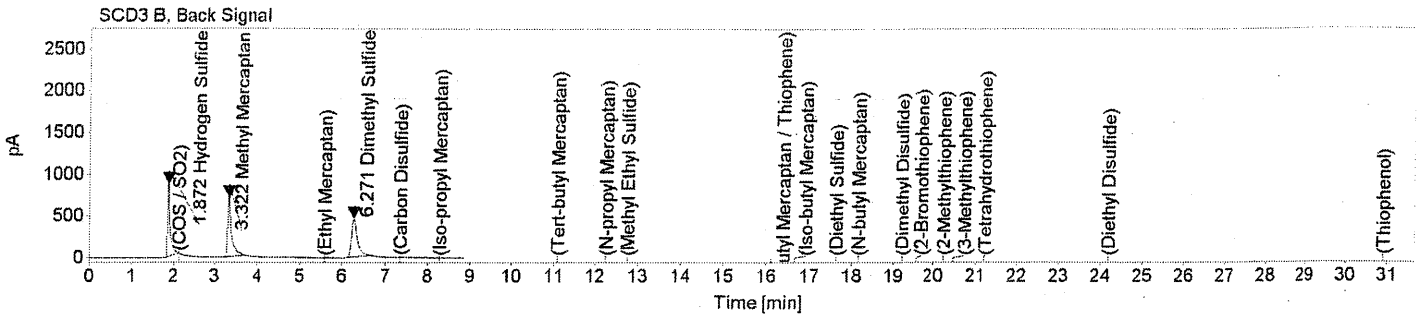
RT [min]	Area	Amount [ppm]	Name
1.870	475.96	0.180	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.320	553.79	0.206	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.277	542.09	0.195	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.581	

3157

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\008B0801.D
Injection date: 7/5/2021 8:57:52 AM
Sample name: 4 ppmV H2S/MeSH/DMS (SS1289x5)
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

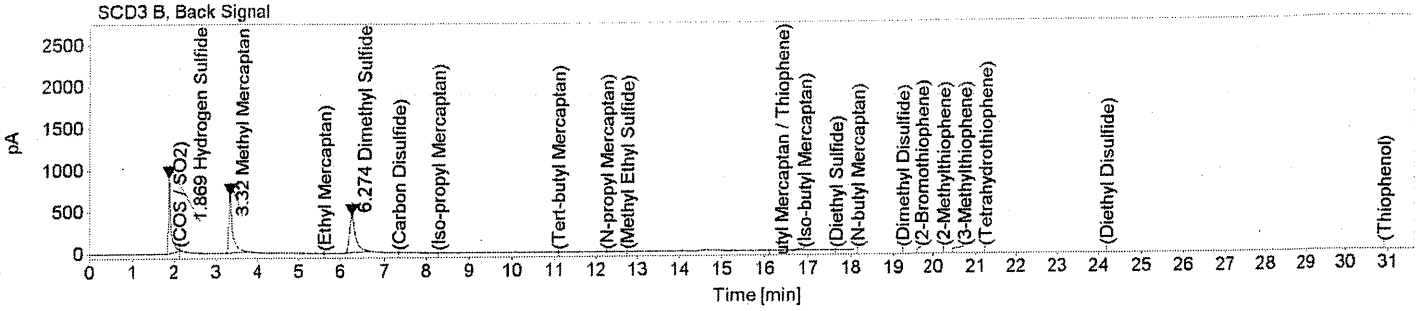
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.872	3794.87	1.432	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.322	4415.21	1.645	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.271	4444.66	1.602	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	4.679	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\009B0901.D
Injection date: 7/5/2021 9:18:08 AM
Sample name: 4 ppmV H2S/MeSH/DMS (SS1289x5) dp
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

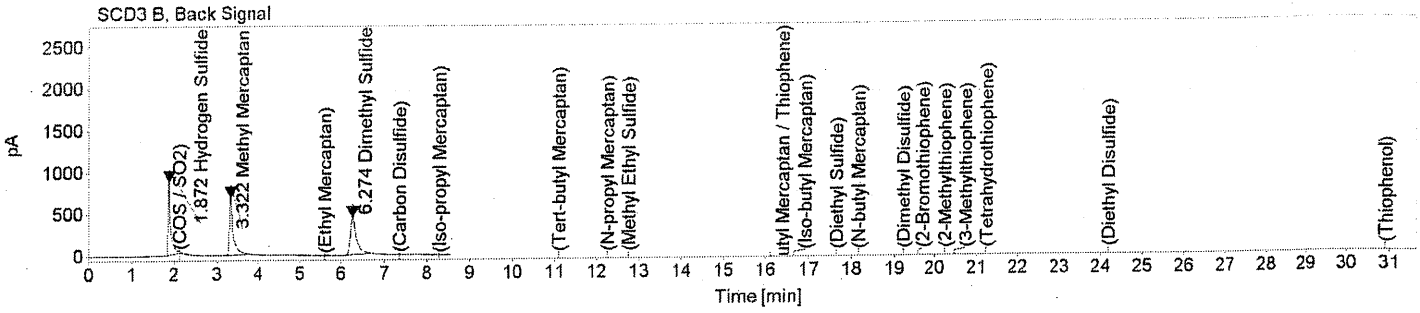
RT [min]	Area	Amount [ppm]	Name
1.869	3867.9	1.459	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.320	4369.01	1.628	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.274	4363.83	1.572	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	4.660	

3579

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\010B1001.D
Injection date: 7/5/2021 9:39:35 AM
Sample name: 4 ppmV H2S/MeSH/DMS (SS1289x5) tp
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

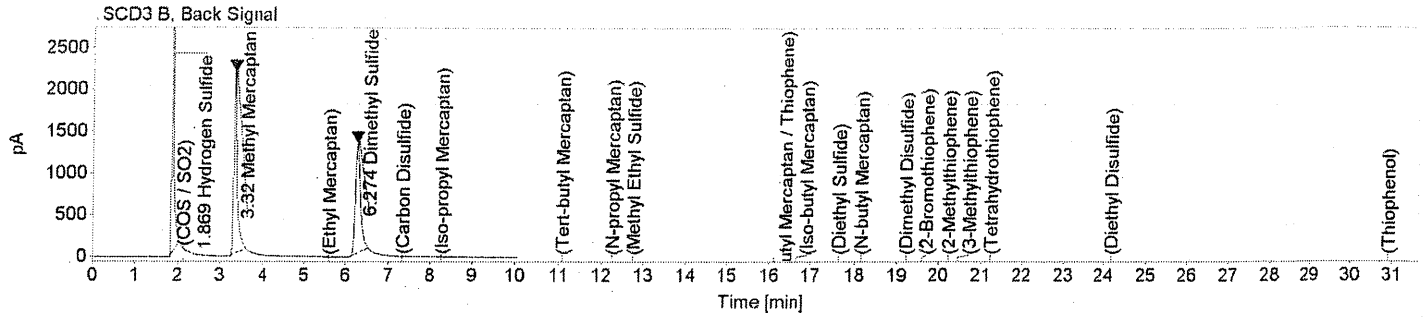
RT [min]	Area	Amount [ppm]	Name
1.872	3989.95	1.505	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.322	4421.32	1.648	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.274	4402.75	1.587	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	4.739	

7/5/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\011B1101.D
Injection date: 7/5/2021 9:55:28 AM
Sample name: 10 ppmV H2S/MeSH/DMS (SS1289x2)
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

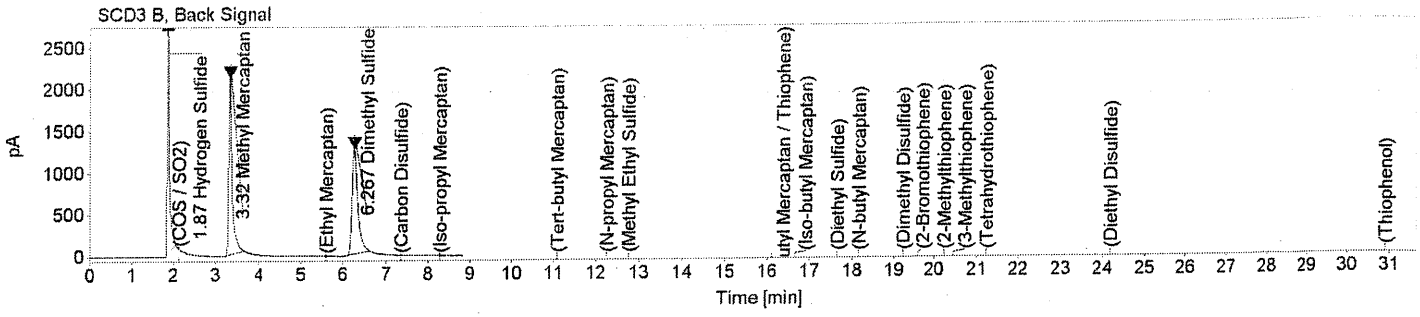
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.869	9881.69	3.728	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.320	10967.48	4.087	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.274	10805.34	3.894	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	11.709	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\012B1201.D
Injection date: 7/5/2021 10:08:57 AM
Sample name: 10 ppmV H2S/MeSH/DMS (SS1289x2) dp
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

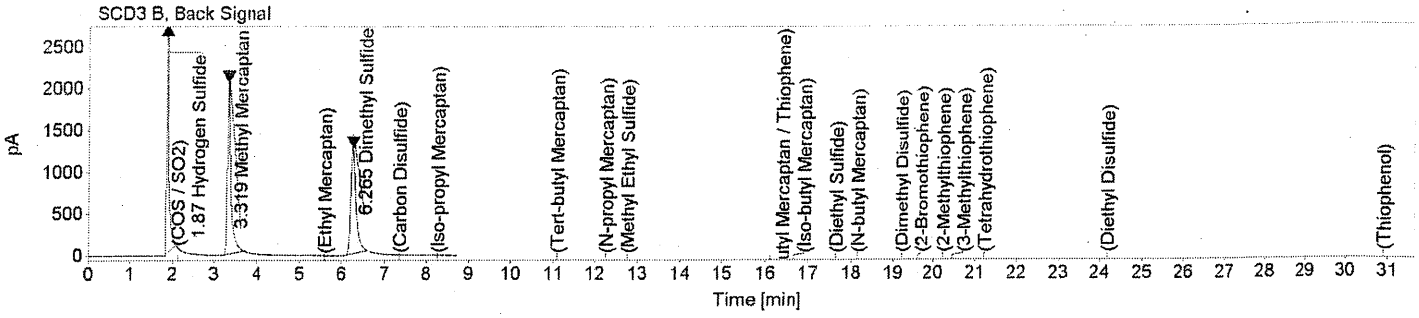
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.870	9952.41	3.755	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.320	10988.33	4.095	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.267	10895.77	3.926	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	11.776	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\013B1301.D
Injection date: 7/5/2021 10:21:24 AM
Sample name: 10 ppmV H2S/MeSH/DMS (SS1289x2) tp
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

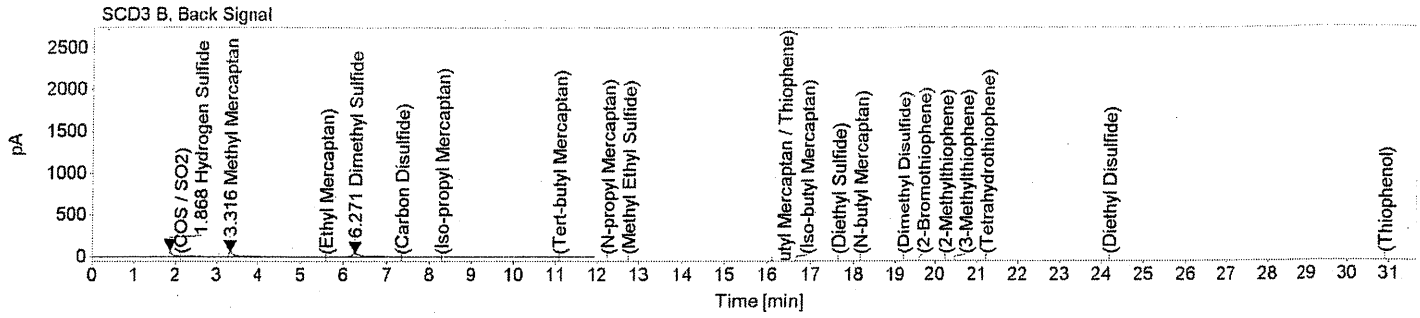
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.870	9761.87	3.683	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.319	10888.88	4.058	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.265	10982.09	3.957	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	11.698	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\005B0501.D
Injection date: 7/5/2021 8:18:00 AM
Sample name: 500 ppbV H2S/MeSH/DMS (SS~~1192~~1289x40)
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

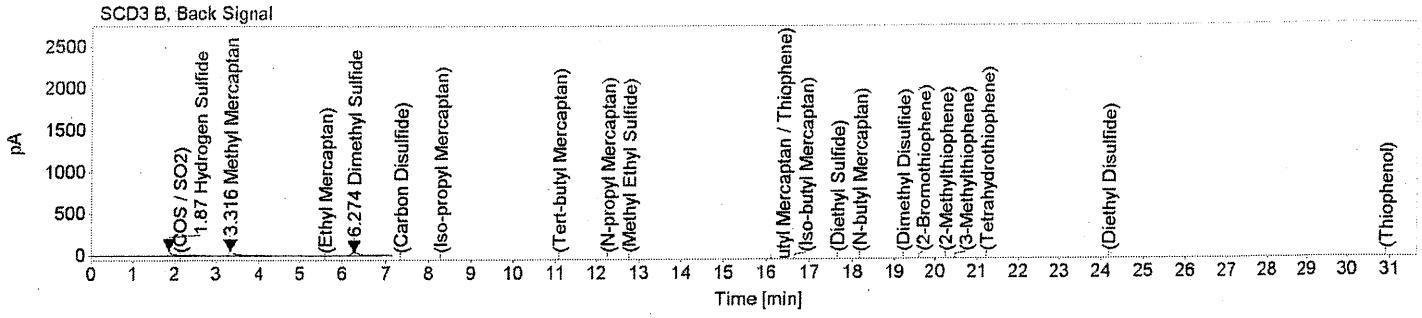
RT [min]	Area	Amount [ppm]	Name
1.868	482.41	0.182	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.316	539.88	0.201	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.271	543.62	0.196	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.579	

7/6/21

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\006B0601.D
Injection date: 7/5/2021 8:34:02 AM
Sample name: 500 ppbV H2S/MeSH/DMS (SS1192x40) dp
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

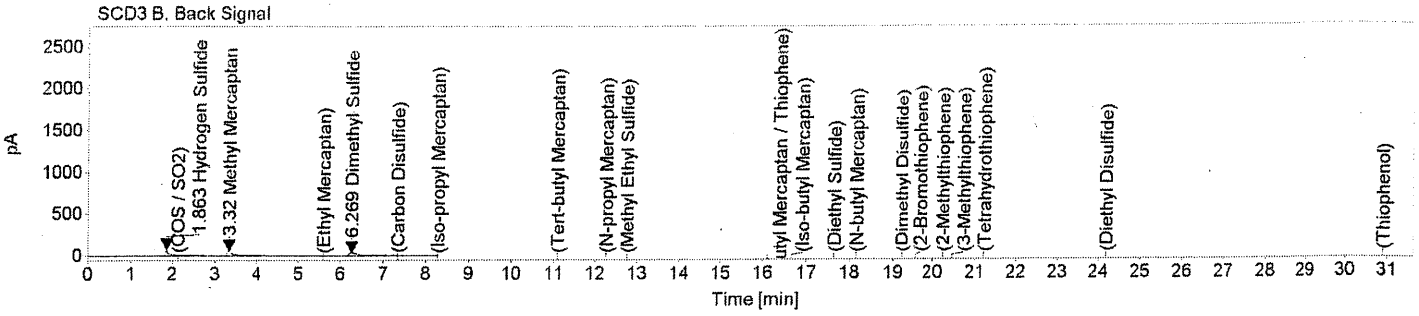
Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.870	489.96	0.185	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.316	552.37	0.206	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.274	537.67	0.194	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.584	

TRS Analysis

Data file: C:\CHEM32OL\1\DATA\2021\007B0701.D
Injection date: 7/5/2021 8:44:30 AM
Sample name: 500 ppbV H2S/MeSH/DMS (SS1192x40) tp
Acq. method: SCD_Only.M
Analysis method: TRS 020320.M

Instrument: GC-BTU
Acq. operator: SYSTEM
Sample multiplier: 1



Uncalibrated Peaks: using H2S

Description SCD3 B, Back Signal

RT [min]	Area	Amount [ppm]	Name
1.863	487.91	0.184	Hydrogen Sulfide
0.000	0	0.000	COS / SO2
3.320	547.29	0.204	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
6.269	555.91	0.200	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Methyl Ethyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan / Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Bromothiophene
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	Thiophenol
	Sum	0.588	

Calibration Table

General Calibration Setting

Calib. Data Modified : 7/13/2021 7:24:52 AM
Signals calculated separately : No

Rel. Reference Window : 1.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 1.000 %
Abs. Non-ref. Window : 0.100 min
Uncalibrated Peaks : using compound Hydrogen Sulfide
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear (some peaks differ, see below)
Origin : Forced (some peaks differ, see below)
Weight : Equal

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Signal Details

Signal 1: SCD3 B, Back Signal

Overview Table

RT	Sig	Lvl	Amount [ppm]	Area	Rsp.Factor	Ref	ISTD	#	Compound
1.869	1	1	5.20000e-2	48.96000	1.06209e-3	No	No		Hydrogen Sulfide
		2	5.20000e-2	48.99000	1.06144e-3				
		3	5.20000e-2	48.56000	1.07084e-3				
		4	5.20000e-1	491.25000	1.05852e-3				
		5	5.20000e-1	473.94000	1.09719e-3				

RT	Sig	Lvl	Amount [ppm]	Area	Rsp.Factor	Ref	ISTD	#	Compound
		6	5.20000e-1	475.96000	1.09253e-3				
		7	4.15800	3794.87000	1.09569e-3				
		8	4.15800	3867.90000	1.07500e-3				
		9	4.15800	3989.95000	1.04212e-3				
		10	10.39500	9881.69000	1.05195e-3				
		11	10.39500	9952.41000	1.04447e-3				
		12	10.39500	9761.87000	1.06486e-3				
2.120	1	1	1.00000	946.94000	1.05603e-3	No	No		COS / SO2
3.343	1	1	5.30000e-2	53.47000	9.91210e-4	No	No		Methyl Mercaptan
		2	5.30000e-2	55.12000	9.61538e-4				
		3	5.30000e-2	54.26000	9.76778e-4				
		4	5.27000e-1	537.87000	9.79791e-4				
		5	5.27000e-1	522.81000	1.00801e-3				
		6	5.27000e-1	553.79000	9.51624e-4				
		7	4.21600	4415.21000	9.54881e-4				
		8	4.21600	4369.01000	9.64978e-4				
		9	4.21600	4421.32000	9.53561e-4				
		10	10.54000	1.09675e4	9.61023e-4				
		11	10.54000	1.09883e4	9.59199e-4				
		12	10.54000	1.09821e4	9.59744e-4				
5.600	1	1	1.00000	1041.97000	9.59721e-4	No	No		Ethyl Mercaptan
6.290	1	1	5.20000e-2	54.19000	9.59587e-4	No	No		Dimethyl Sulfide
		2	5.20000e-2	54.10000	9.61183e-4				
		3	5.20000e-2	54.60000	9.52381e-4				
		4	5.22000e-1	551.13000	9.47145e-4				
		5	5.22000e-1	553.53000	9.43038e-4				
		6	5.22000e-1	542.09000	9.62940e-4				
		7	4.17600	4444.66000	9.39554e-4				
		8	4.17600	4363.83000	9.56958e-4				
		9	4.17600	4402.75000	9.48498e-4				
		10	10.44000	1.08053e4	9.66189e-4				
		11	10.44000	1.08958e4	9.58170e-4				
		12	10.44000	1.09821e4	9.50639e-4				
7.350	1	1	1.00000	2083.00000	4.80077e-4	No	No		Carbon Disulfide
8.270	1	1	1.00000	1042.00000	9.59693e-4	No	No		Iso-propyl Mercaptan
11.100	1	1	1.00000	1042.00000	9.59693e-4	No	No		Tert-butyl Mercaptan
12.260	1	1	1.00000	1042.00000	9.59693e-4	No	No		N-propyl Mercaptan
12.760	1	1	1.00000	1045.10000	9.56846e-4	No	No		Methyl Ethyl Sulfide
16.100	1	1	1.00000	1042.00000	9.59693e-4	No	No		Sec-butyl Mercaptan / Thiophene
16.650	1	1	1.00000	1042.00000	9.59693e-4	No	No		Iso-butyl Mercaptan
17.660	1	1	1.00000	1045.10000	9.56846e-4	No	No		Diethyl Sulfide
18.150	1	1	1.00000	1042.00000	9.59693e-4	No	No		N-butyl Mercaptan
19.214	1	1	1.00000	2083.00000	4.80077e-4	No	No		Dimethyl Disulfide
19.600	1	1	1.00000	946.94000	1.05603e-3	No	No		2-Bromothiophene
20.240	1	1	1.00000	946.94000	1.05603e-3	No	No		2-Methylthiophene
20.460	1	1	1.00000	946.94000	1.05603e-3	No	No		3-Methylthiophene
21.220	1	1	1.00000	946.94000	1.05603e-3	No	No		Tetrahydrothiophene
24.180	1	1	1.00000	2083.00000	4.80077e-4	No	No		Diethyl Disulfide
30.900	1	1	1.00000	3884.00000	2.57467e-4	No	No		Thiophenol

More compound-specific settings

Compound: Hydrogen Sulfide
  Curve Type : Linear
  Origin : Forced

Compound: COS / SO2
  Curve Type : Linear
  Origin : Forced

Compound: Methyl Mercaptan
  Curve Type : Linear
  Origin : Forced

Compound: Ethyl Mercaptan
  Curve Type : Linear
  Origin : Forced

Compound: Dimethyl Sulfide
  Curve Type : Linear
  Origin : Forced

Compound: Carbon Disulfide
  Curve Type : Linear
  Origin : Forced

Compound: Iso-propyl Mercaptan
  Curve Type : Linear
  Origin : Forced

Compound: Tert-butyl Mercaptan
  Time Window : From 10.900 min To 11.300 min
  Curve Type : Linear
  Origin : Forced

Compound: N-propyl Mercaptan
  Curve Type : Linear
  Origin : Forced

Compound: Methyl Ethyl Sulfide
  Curve Type : Linear
  Origin : Forced

Compound: Sec-butyl Mercaptan / Thiophene
  Time Window : From 15.970 min To 16.350 min
  Curve Type : Linear
  Origin : Forced

Compound: Iso-butyl Mercaptan
  Time Window : From 16.490 min To 16.783 min
  Curve Type : Linear
  Origin : Forced

Peak Sum Table

No Entries in table

Method C:\CHEM32OL\1\METHODS\ANALYSIS\TRS 070521.M

1 Warnings or Errors :

Warning : Overlapping peak time windows at 20.24 min, signal 1

RSK-175 METHOD

STANDARD OPERATING PROCEDURE

DETERMINATION OF DISSOLVED GASES BY GAS CHROMATOGRAPHY

Method Number: RSK-175
Matrix: Aqueous
Sampling Media: VOA Vial

APPROVAL

Date Issued: December 14, 2017
Prepared By: Zandra Baja

Laboratory Manager Approval _____

Laboratory Director Approval _____

PREFACE

This is a Standard Operating Procedure (SOP). The analyst must read, understand, and follow this procedure explicitly.

A copy of this SOP is permanently placed in the laboratory area where the work is performed. The Department Supervisor, Quality Assurance Coordinator, and President/General Manager of Operations each have a copy of this document. Any changes in the SOP need to be approved by the Quality Assurance Coordinator. Each page of such changes will be initialed, dated, and concurrently incorporated into all copies located in the laboratory.

Revision History

Revision #	Date	Author	Change Reference	Reason for Change
01	Unknown	Vanessa Vera	NA	Initial Release
02	11/19/2009	Benjamin Witten	All Pages	Periodic Review
03	12/14/2017	Zandra Baja	All Pages	Periodic Review

1. SCOPE AND APPLICATION

1.1. This method applies to the analysis of dissolved gases in water samples using a GC headspace equilibration technique.

1.2. For Alkanes and Alkenes a Limit of Detection (LOD) of 0.021-0.037 ppmv was achieved and a Practical Quantitation Limit (PQL) of 0.5 ppmv was determined. The Method Reporting Limit (MRL) was established at 0.5 ppmv for all compounds.

1.3. For CO_2 a LOD of 0.15ppmv was achieved and a PQL of 1.00ppmv was determined. The MRL was established at 1.0ppmv. MDL STUDY PENDING

1.4. For LOD and PQL determination refer to the QA/QC plan. Sample Reporting Limits (SRLs) are calculated as the product of the MRL and all sample dilution factors or concentration factors.

2. SUMMARY OF METHOD

A liquid sample is collected using a glass VOA Vial. A headspace is created by replacing 10 mL of the sample volume with UHP helium. The dissolved gas is allowed to equilibrate into the headspace. The headspace is extracted and separated by Gas Chromatography (GC) and individually quantified using a Flame Ionization Detector (FID). Alkanes and Alkenes are analyzed on one instrument and CO_2 on another. Compound identification is based on comparing peak retention times to those of authentic standards. The concentration of dissolved gas can then be determined by using the sample's volume, temperature, and Henry's gas law.

3. SAFETY

3.1. All samples should be treated as hazardous and precautions should be taken when handling. Personal Protective Equipment (PPE) such as safety glasses, gloves and lab coats should be worn at all times. Solvents and reagents should be handled under hoods and used only by trained personnel. Refer to the MSDS before use if there are any concerns as to the safe handling and disposal of material.

3.2. All solvents and materials used for preparation of standards or sample preparation are emptied into the Organic Waste Drum or other appropriate container. An outside contractor according with proper waste disposal procedures disposes of the organic waste drum contents. Procedures and waste manifest are in possession of the Technical Director.

4. SAMPLE HANDLING AND PRESERVATION

4.1. Liquid samples are collected in a VOA vial and sealed with a cap and septa.

4.2. The samples are preserved with HCl to a pH of ≤ 2 or with a different appropriate preservative if requested by the client.

4.3. The samples are stored at 4°C.

4.4. Unpreserved samples must be analyzed within 7 days of collection. Preserved samples must be analyzed within 14 days of collection.

5. INTERFERENCES

5.1. Method interferences may be caused by contaminants in solvents, reagents, glassware and/or other sample processing hardware. All materials used must routinely demonstrate that they are free from interferences under the conditions of the analysis by running method blanks.

5.2. Syringes must be thoroughly cleaned and stored in a clean environment to help minimize interference problems.

5.3. The use of high purity gases, reagents and solvents helps to minimize interference problems.

5.4. Contamination by carryover can occur whenever high-level and low-level samples are sequentially analyzed. Whenever an unusually high sample is encountered, it should be followed by the analysis of a Helium blank to check for carryover.

6. INSTRUMENTATION AND EQUIPMENT

6.1. For Alkanes and Alkenes analysis

6.1.1. Gas Chromatograph with gas sampling loop – Hewlett Packard HP 5890 Series II GC System with cryogenic valve

6.1.2. Flame Ionization Detector

6.1.3. Analytical Column – Restek Rxi-1ms, 60m x 0.25mm ID x 1µm, Catalog #13356

6.1.4. XL-65 HP Liquid Nitrogen Dewar at 50 psi.

6.2. For CO_2 analysis

6.2.1. Gas Chromatograph with gas sampling loop and two-catalyst system – Agilent 6890N GC System with catalyst regeneration capability.

6.2.2. Flame Ionization Detector

6.2.3. Analytical Column – Restek: CHR-106 80/100 7ft x 2.0mm ID 1/8 in OD on one end, and Tenax-TA packed on the other end, Part number: PC2827

6.2.4. Oxidation Catalyst – Chromium (III) Oxide on Alumina pellets

6.2.5. Reduction Catalyst – Reduced Nickel

6.3. Data Processing System – Chromperfect Spirit or Chemstation

6.4. Glass VOA vial with septum cap.

6.5. 10 mL graduated gastight syringes equipped with three-way on/off valves designated as “wet syringe” or “dry syringe”

6.6. 8 cm 20 gauge needle

6.7. 10 mL glass syringe

6.8. Rotary shaker

7. STANDARDS AND REAGENTS

7.1. Standards – Stock standard may be purchased as a certified standard or prepared from pure materials. Purchased certified standards may be used until their certified expiration date. Prepared standards that are greater than 1,000 ppm are good for 1 year. Prepared standards that are less than or equal to 1,000 ppm are good for 6 months.

7.1.1. Each standard is logged into the AAC Stock Standard / Reagent Logbook and given a unique identification number (SS####) upon receipt. All Prepared Standards are logged into the AAC Standard Preparation Logbook and given a unique identification number (PSmmddyy-##). This PS # is noted for all QC standards in the sequence.

7.1.2. Our current stock standard for C1-C6 Alkanes/Alkenes is from Airgas and is a NIST certified 500 ppmv ±2% standard with a balance gas of Nitrogen.

7.1.3. Our current stock standard for CO_2 is from Airgas and is a NIST certified 1000 ppmC ±2% standard of CO, CH_4, CO_2, and C_3H_8 with a balance gas of Nitrogen.

7.2. UHP Helium is transferred from our large size cylinders into 6L Summa canisters in order to make standard and sample dilutions.

8. PROCEDURE

8.1. Sample Receipt and Storage

8.1.1. Upon receipt liquid samples are checked to ensure that there is no headspace.

8.1.2. The samples are then assigned a unique laboratory ID number and stored in a refrigerator at 4^{o}C.

8.2. Sample Analysis

8.2.1. Check that all of the GC operating conditions are properly set and that the sample loop valve is in the Load position.

8.2.2. Allow the samples to equilibrate to room temperature.

8.2.3. Purge a 10 mL glass syringe several times with UHP helium then fill with 10 mL of UHP helium. Attach an 8 cm 20 gauge needle to the glass syringe then insert into the septum of the VOA vial. Simultaneously insert the 10 mL gastight wet syringe needle into the septum.

8.2.4. Pull the plunger of the wet syringe to remove 10 mL of the liquid sample. Helium from the gas syringe is pulled into the vial by vacuum and creates a 10 mL headspace.

8.2.5. The sample is then shaken for 5 minutes on a rotary shaker.

8.2.6. Insert the needle of the gastight dry syringe into the septum to extract the 10 mL headspace.
*Note: DO NOT allow the needle to make contact with the liquid phase

8.2.7. Inject the 10 mL headspace of the sample through the gas sampling loop of the GC. Turn the sample loop valve to Inject and press the Start button on the GC.

8.3. Standard Preparation and generation of calibration curve for Alkanes and Alkenes analysis

8.3.1. Multiple calibration standards for each of the stock standards are prepared by diluting the 500 ppmv stock standard in a gastight glass syringe using UHP Helium.

8.3.2. The calibration curve typically includes the following points: 5, 50, and 200 ppmv.

8.3.3. Each calibration point is analyzed in triplicate and the peak areas should be within 10% of their average. Using the average area, a linear regression is produced and a least squares line is drawn.

8.4. Standard Preparation and generation of calibration curve for CO_2 analysis

8.4.1. Multiple calibration standards for CO_2 are prepared by diluting the stock standard in a gastight glass syringe using UHP Helium.

8.4.2. The calibration curve typically includes the following points: 10, 100, and 500 ppmv.

8.4.3. Each calibration point is analyzed in triplicate and the peak areas should be within 10% of their average. Using the average area, a linear regression is produced and a least squares line is drawn.

8.5. GC Preparation for Alkanes and Alkenes analysis:

8.5.1. Turn the GC Oven on and set the temperature to 200ºC ~15-30 minutes prior to use.

8.5.2. Turn on the Liquid Nitrogen Dewar (turn off at the end of the day).

8.5.3. Turn on the cryogenic valve on the GC prior to use (turn off at the end of the day).

8.5.4. GC conditions:

GC 5890 #3 Instrument Control Parameters – "M18" Run Method

Control Information
Sample Inlet = GC
Injection Source = sampling loop

Oven
Initial Temperature = -20°C
Initial Time = 2.5min
Ramp 1 = 25°C/min to 225°C
Final Temperature = 225°C
Final Temperature Hold = 12.5min
Total GC Run Time = 24.0min
Maximum Temperature = 400ºC
Equilibration Time = 0.1min
Cryo Valve = On at 75ºC

Inlet
Initial Temperature = 100ºC (On)
Carrier Gas Pressure = 40psi (On)
Gas Type = Helium

Column
Model Number = Rxi-1ms
Max Temperature = 350ºC
Nominal Length = 60m
Nominal Diameter = 0.250mm ID
Mode = constant pressure
Nominal Initial Pressure = 40psi
Outlet Pressure = ambient

Detector (FID)
Temperature = 300ºC (On)
Air Pressure = ~400mL/min
Hydrogen Pressure = ~40mL/min
Makeup Pressure (He) = ~40mL/min

Signal
Data Rate = 10Hz
Save Data = On
Zero = 0.0 (Off)
Range = 0

8.6. GC Preparation for CO_2 analysis:

8.6.1. Turn the GC oven on and set the temperature to 190ºC ~15-30 minutes prior to use.

8.6.2. Turn catalyst system to on prior to use (turn off at the end of the day).

8.6.3. GC conditions:

GC TCA #2 Instrument Control Parameters – "25C 3C 2018" Run Method

OVEN
Initial temp: 40 'C (On) Maximum temp: 290 'C
Initial time: 3.50 min Equilibration time: 3.00 min
Ramps:

#	Rate	Final temp	Final time
1	35.00	190	4.00
2	0.0(Off)		

Post temp: 150 'C
Post time: 0.00 min
Run time: 11.79 min

FRONT INLET (SPLIT/SPLITLESS)
Mode: Splitless
Initial temp: 200 'C (On)
Pressure: 20.50 psi (On)
Purge flow: 0.0 mL/min
Purge time: 0.00 min
Total flow: 75.0 mL/min
Gas saver: Off
Gas type: Helium

BACK INLET (SPLIT/SPLITLESS)
Mode: Splitless
Initial temp: 200 'C (On)
Pressure: 24.00 psi (On)
Purge flow: 0.0 mL/min
Purge time: 0.00 min
Total flow: 45.0 mL/min
Gas saver: Off
Gas type: Helium

COLUMN 1
Packed Column
Model Number: Agilent Haysep D
Max temperature: 300 'C
Mode: constant flow
Nominal init pressure: 20.50 psi
Inlet: Front Inlet
Outlet: Front Detector
Outlet pressure: ambient

COLUMN 2
Packed Column
Model Number: Agilent Shincarbon
Max temperature: 300 'C
Mode: constant flow
Nominal init pressure: 24.00 psi
Inlet: Back Inlet
Outlet: Back Detector
Outlet pressure: ambient

FRONT DETECTOR (FID)
Temperature: 275 'C (On)
Hydrogen flow: 50.0 mL/min (On)
Air flow: 400.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 10.0 mL/min (On)
Makeup Gas Type: Helium
Flame: On
Electrometer: On
Lit offset: 2.0

BACK DETECTOR (TCD)
Temperature: 250 'C (On)
Reference flow: 20.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 5.0 mL/min (On)
Makeup Gas Type: Helium
Filament: On
Negative polarity: Off

SIGNAL 1
Data rate: 100 Hz
Type: front detector

SIGNAL 2
Data rate: 100 Hz
Type: back detector

Save Data: On
Zero: 0.0 (Off)
Range: 0
Fast Peaks: Off
Attenuation: 0

Save Data: On
Zero: 0.0 (Off)
Range: 0
Fast Peaks: Off
Attenuation: 0

COLUMN COMP 1
Derive from front detector

COLUMN COMP 2
Derive from back detector

THERMAL AUX 1
Use: Valve Box Heater
Description:
Initial temp: 75 'C (On)
Initial time: 0.00 min
Rate Final temp Final time
1 0.0(Off)

VALVES
Valve 1 Switching Off
Description: FID Valve
Valve 2 Switching Off
Description: TCD Valve

POST RUN
Post Time: 0.00 min

TIME TABLE

Time	Specifier	Parameter & Setpoint
0.00	Back Detector Polarity:	On
0.00	Valve 1:	On
0.00	Valve 2:	On
2.00	Back Detector Polarity:	Off
7.75	Valve 1:	Off
8.00	Valve 2:	Off

8.6.4. Catalyst conditions:

Transfer Line Temperature = 104ºC
Oxidizer Temperature = 152ºC
Methanizer Temperature = 381ºC
H_2 = ??mL/min [Manual]

8.7. Analysis Sequence

8.7.1. System Blank – For the first injection of the day on each instrument, and any time that sample carryover has occurred, the analyst must demonstrate, through the analysis of a system blank that there are no interferences from the analytical system. The system blank used in this method is UHP Helium.

8.7.2. CCV – Before analyzing any samples, after every 15 samples, and at the end of each sequence, a CCV should be analyzed to verify that the instrument's calibration is still valid. The concentration of this standard should be within the range of the samples and at least 10

times the detection limit. Generally a CCV for the Alkanes and Alkenes is prepared at 100 ppmv by diluting the stock standards in section 7.1.2 and 7.1.3 with UHP Helium, and one is prepared for CO_2 at 200 ppmv by diluting the stock standard in section 7.1.4 with UHP Helium.

8.7.3. Method Blank (MB) – Each day before analyzing any samples, a MB must be analyzed. This blank should go through all of the stages of sample preparation and measurement that the samples undergo. The MB used in this method is UHP Helium.

8.7.4. HPLC Water blank – Each day before analyzing any samples, a purged portion of HPLC water must be analyzed following the same stages of sample preparation and measurements as the samples. This blank is made to determine if any contamination is present in the sample preparation and analytical system.

8.7.5. Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (LCSD) – For each batch (up to 20 samples) an LCS and LCSD must be analyzed. The LCS and LCSD are prepared by the addition of the working standard to a blank and go through the same stages of sample preparation and measurement as the samples. Generally the LCS and LCSD concentration is the same as the concentrations in section 8.7.2

8.7.6. Sample Duplicate (Dup) – For every 10 samples, a duplicate injection of the same sample must be analyzed. Inject half of the syringe volume for the sample and the other half for the sample duplicate. If there is not enough sample volume for two injections and the sample is at a high enough concentration then dilute the sample and inject the sample and sample Dup from the diluted sample.

8.7.7. Sample Analysis – Each sample is analyzed and the concentration calculated. If the concentration falls outside of the linear range of the calibration curve then dilutions need to be made and the samples reanalyzed. Enter the sample dilution factor (DF_E) into the data processing software sequence.

9. QUALITY CONTROL

QC Performed	Frequency	Acceptance Criteria	Corrective Action
Calibration Curve	Recommended every 12 months	Correlation Coefficient of a linear least-squares fit $R^2 \geq 0.990$	1 - Rerun curve 2 - Prepare new standards and rerun curve
Continuing Calibration Verification (CCV)	After the curve; Before analyzing any samples; After every 15 samples; and at the end of each sequence	±15% Recovery	1 – Rerun check 2 – Prepare new standard and rerun 3 – Rerun calibration
Laboratory Control Spike and Laboratory Control Spike Duplicate (LCS / LCSD)	For each batch – up to 20 samples	1 – % Recovery 100 ± 15% of theoretical value 2 – RPD <25%	1 – Rerun check 2 – Prepare new standard and rerun 3 – Rerun calibration

Sample Duplicate (DUP)	One duplicate for every 10 samples	RPD <25%	1 – Rerun sample 2 – Flag data
Method Blank (MB)	Before analyzing any samples	<RL	1 – Rerun check 2 – Prepare new blank and rerun
System Blank	Before curve and before processing any samples	<RL	1 – Rerun check 2 – Prepare new blank and rerun
Water Blank	Before analyzing any samples	<RL	1 – Rerun check 2 – Prepare new blank and rerun

9.1. The QC criteria outlined here is above and beyond what the method requires but is adhered to in this lab as good laboratory practice.

9.2. It is the responsibility of the analyst to perform the analysis according to this SOP and complete the documentation required for review.

9.3. It is the responsibility of all personnel who work with samples involving this method to note any anomalies or out-of-control events associated with the analysis of the samples. Any discrepancies must be noted and corrective action taken and documented.

9.4. Document all maintenance procedures in the instrument logbook assigned to each instrument.

10. CALCULATIONS

10.1. The data processing software calculates a Response Factor (RF) from the curve generated in Section 8.3 for each analyte as follows:

$$RF = \frac{P_{ST} - P_0}{C_{ST}}$$

where:

RF = Response factor for the analyte given as area counts per ppmv

P_{ST} = Peak area counts for the analyte standard

P_0 = Calibration curve intercept; in most cases this is zero

C_{ST} = Concentration of analyte in the calibration standard in units of ppmv

10.2. The data processing software calculates the analyte concentration in ppmv for each sample using the following equation:

$$C_{SAM} = \frac{P_{SAM} - P_0}{RF}$$

where:

C_{SAM} = Concentration of analyte in the sample in units of ppmv

P_{SAM} = Peak area counts for the analyte sample

10.3. For those samples that were diluted in Section 8.7.8. the data processing software calculates the analyte concentration using the following formula:

$$C_{SAM} = C_{SAM_{DIL}} * DF_E$$

where:

$C_{SAM_{DIL}}$ = Concentration of analyte in the diluted sample

DF_E = Sample dilution factor used in Section 8.5.7

10.4. The analyte concentration (in ppmv) calculated in Section 10.2 is used to calculate the dissolved gas concentration in the liquid sample in µg/mL. The calculation is based on the Henry's law coefficient for each analyte, the analyte concentration in the headspace, the analyte Moleculer Weight, the density of the headspace gas, the liquid volume, and the temperature of the sample.

10.4.1. Calculate the Total Concentration (TC) of each analyte using the following formula:

$$TC = C_{AH} + C_A$$

where:

C_{AH} = aqueous gas concentration in headspace after equilibrium (calculated in 10.4.2)

C_A = aqueous gas concentration in water after equilibrium (calculated in 10.4.3)

10.4.2. Calculate C_{AH} using the following formula:

$$C_{AH} = \left(\frac{V_H}{V_A - V_H} \right) \times \rho \times p_g \times 10^3 \, mg/g$$

where:

V_H = Volume of headspace in mL

V_A = Volume of aqueous sample

ρ = headspace gas density in g/L

p_g = partial pressure of the gas in Atmospheres

10.4.2.1. Calculate ρ in g/L using the following formula:

$$\rho = \left(\frac{MW_A}{22.4 \, L/mol} \right) \left(\frac{273}{T_G + 273} \right)$$

where :

MW_A = Molecular Weight of analyte A in g/mol

T_G = Temperature of the headspace gas in Celsius

10.4.2.2. Calculate p_g in Atmospheres using the following formula:

$$p_g = C_{SAM} \times 10^{-6} \times 1atm$$

10.4.3. Calculate C_A using the following formula:

$$C_A = 55.5 \frac{mol}{L} \left(\frac{p_g}{H_A} \right) \times MW_A \times 10^3 \; mg/g$$

where :

H_A = Henry's Law Constant for Analyte A in atm/(mole fraction) =atm, see Table 1

$55.5 \frac{mol}{L}$ = molar concentration of water

10.5. Calculate the CCV recoveries as follows:

$$\%\text{Rec}_{\text{CCV}} = \left(\frac{C_{CCV}}{C_{TC}} \right) * 100$$

where:

C_{CCV} = Measured concentration of the CCV

C_{TC} = Theoretical concentration of the CCV

10.6. Calculate the LCS recoveries as follows:

$$\%\,\text{Rec}_{LCS} = \left(\frac{C_{LCS} - C_{SAM}}{C_{spike}} \right) * 100$$

where:

C_{LCS} = Measured concentration of the LCS in %

C_{spike} = Spike concentration in %

10.7. Calculate the Relative Percent Difference (RPD) for the LCS / LCSD using the following formula:

$$RPD_{LCS} = ABS \left[\frac{C_{LCSdup} - C_{LCS}}{Average(C_{LCSdup}, C_{LCS})} \right] * 100$$

where:

C_{LCSdup} = Measured concentration of the LCSD in %

10.8. Calculate the Relative Percent Difference (RPD) for the duplicate samples using the following formula:

$$RPD_{SAM} = ABS\left[\frac{C_{DUP} - C_{SAM}}{Average(C_{SAM}, C_{DUP})}\right] * 100$$

where:

C_{DUP} = Duplicate sample concentration in %

ABS = Absolute Value

11. REPORTING FORMAT

11.1. The samples are reported as µg/mL for each analyte.

11.2. Any samples with analyte values below the Sample Reporting Limit are reported as <SRL for the specific analyte. If other analytes are present they are reported as stated in section 11.1.

12. REFERENCES

"RSK-175– Sample Preparation and Calculations for Dissolved Gas Analysis in Water Samples Using a GC Headspace Equilibration Technique", R. Sander (1999).

Compilation of Henry's Law Constants for Inorganic and Organic Species of Potential Importance in Environmental Chemistry (Version 3), http://www.henrys-law.org.

TABLE 1. SELECT HENRY'S LAW CONSTANTS

Analyte	Henry's Law constant - H (atm/mole fraction) at 25 C*
Methane	39769
Ethane	29126
Propane	36893
Butane	50309
Pentane	68321
Hexane	92233
Ethene	11616

Acetylene	1333
Hydrogen	70719
Oxygen	95411
CO_2	1628
Nitrous Oxide	43414

*From R. Sander (1999)

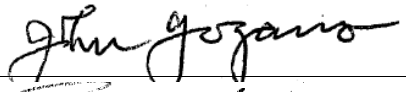
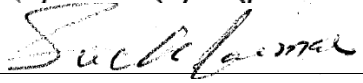
ASTM D-5504-20 METHOD

STANDARD OPERATING PROCEDURE

DETERMINATION OF SULFUR COMPOUNDS IN NATURAL GAS AND GASEOUS FUELS BY GAS CHROMATOGRAPHY AND CHEMILUMINESCENCE

Method Number: ASTM D-5504-20
Matrix: Air
Sampling Media: Tedlar Bag or Passivated Canister

APPROVAL

Function	Name	Signature	Date
Laboratory Manager	John Yokoyama		03/15/2021
Technical Director	Sucha Parmar, PhD		03/15/2021

PREFACE

This is a Standard Operating Procedure (SOP). The analyst must read, understand, and follow this procedure explicitly. Digital and printed versions are available to all laboratory personnel. Any changes in the SOP need to be approved by the Laboratory Manager and Technical Director.

Revision History

Revision No.	Date	Author	Description of Change
01	Unknown	Unknown	Initial Release
02	05/29/2002	Vanessa Vera	Periodic Review
03	01/04/2007	Marcus Hueppe	Periodic Review
04	11/23/2009	Diana Ngo	Periodic Review
05	09/11/2018	Zandra Baja	Periodic Review
06	03/15/2021	Daniel Larson, David Beauvais	Updated safety, analysis, instrument parameters sections, and MDL; applied new formatting to document; added glossary section.

1. SCOPE AND APPLICATION

1.1. This method applies to the analysis of volatile sulfur-containing compounds in high methane content gaseous fuels such as natural gas samples utilizing Gas Chromatography (GC) with Sulfur Chemiluminescence Detection (SCD). This method has also been applied to other types of gaseous samples including air, digester, landfill, and refinery fuel gas.

1.2. The method suggests a detection range of 0.01 to 1,000 mg/m3 or 7 to 700,000 ppbv for a 1 mL sample. This SOP covers the low-level instrumentation system used to perform this methodology.

1.2.1. A Limit of Detection (LOD) of 1.086 ppbv was achieved and a Practical Quantitation Limit (PQL) of 10.5 ppbv was determined for Hydrogen Sulfide (H2S). The Method Reporting Limit (MRL) was established at 1.12 ppbv for H2S.

1.2.2. A Limit of Detection (LOD) of 1.080 ppbv was achieved and a Practical Quantitation Limit (PQL) of 10.5 ppbv was determined for Methyl Mercaptan (MeSH). The Method Reporting Limit (MRL) was established at 1.12 ppbv for MeSH.

1.2.3. A Limit of Detection (LOD) of 1.118 ppbv was achieved and a Practical Quantitation Limit (PQL) of 11.0 ppbv was determined for Dimethyl Sulfide (DMS). The Method Reporting Limit (MRL) was established at 1.12 ppbv for DMS.

1.3. For LOD and PQL determinations refer to the LOD and LOQ Determination SOP. Sample Reporting Limits (SRLs) are calculated as the product of the MRL and all sample dilution factors or concentration factors.

2. SUMMARY OF METHOD

Air samples are collected using either Tedlar bags or passivated (Silco or Silonite) Canisters. The individual sulfur components of a gas mixture are separated by GC and quantified using a SCD.

3. SAFETY

3.1. All samples should be treated as hazardous and precautions should be taken when handling. Personal Protective Equipment (PPE) such as safety glasses, gloves and lab coats should be worn at all times. Refer to the Safety Data Sheets (SDS) before use if there are any concerns as to the safe handling and disposal of material.

3.2. All sample canisters should be handled as if they contain hazardous toxic compounds; sample canisters should never be opened unless attached to the auto-sampler or in a fume hood.

3.3. Any use of solvents and reagents should be handled under a fume hood and properly disposed of by trained personnel.

4. SAMPLE HANDLING AND PRESERVATION

4.1. Air samples are collected and stored in Tedlar Bags, Silco or Silonite Canisters, non-reactive vessels, or other approved sampling media.

4.2. A minimum of 20 mL of sample is needed to flush the loop.

4.3. Air samples should be stored in a cool, dry, dark place and must be analyzed within 24 hours of sampling time if collected in a Tedlar Bag, and within seven (7) days if collected in a Silco or Silonite Canister or another passivated container.

5. INTERFERENCES

5.1. Method interferences may be caused by contaminants in solvents, reagents, glassware and/or other sample processing hardware. All materials used must routinely demonstrate that they are free from interferences under the conditions of the analysis by running method blanks.

5.2. Syringes must be thoroughly cleaned and stored in a clean environment to help minimize interference problems.

5.3. The use of high purity gases, reagents, and solvents helps to minimize interference problems.

5.4. Canisters must be thoroughly cleaned and stored in a clean environment to help minimize interference problems. Refer to the Canister Cleaning SOP for further details.

5.5. Contamination by carryover can occur whenever high-level and low-level samples are sequentially analyzed. Whenever an unusually high sample is encountered, it should be followed by the analysis of a Method Blank to check for carryover.

6. INSTRUMENTATION AND EQUIPMENT

6.1. Gas Chromatograph with Sulfur Chemiluminescence Detection

6.1.1. Agilent 6890N GC with Agilent 355 SCD (Low-Level System)

6.1.1.1. Analytical Column – Agilent DB-Sulfur SCD 60 m x 0.320 mm x 4.2 μm

6.1.1.2. Data Processing System – Agilent Chemstation

6.1.2. Agilent 7890B with Agilent 8355 SCD

6.1.2.1 Analytical Column – Agilent DB-Sulfur SCD 60 m x 0.320 mm x 4.2 μm

6.1.2.1. Data Processing System – Agilent Chemstation

6.2. Digital Pressure Gauge – Ashcroft Model # 2074 (± 0.25%Full scale)

6.3. Silco or Silonite Canisters – 6.0L, 1.4L, or other customer provided sizes.

6.4. Graduated Gastight Syringes – various sizes of clean graduated gastight glass syringes equipped with three-way on/off valves.

7. STANDARDS AND REAGENTS

7.1. Standards – Certified gas phase standards are purchased from reliable sources. Standards may be used until their certified expiration date. Prepared standards that are greater than 1,000 ppm are good for 1 year. Prepared standards that are less than or equal to 1,000 ppm are good for 6 months.

7.1.1. Each standard is logged into the AAC Stock Standard / Reagent Logbook and given a unique identification number (SS####) upon receipt. All standard preparations are logged into the AAC Standard Preparation Logbook and given a unique identification number (PSmmddyy-##). This PS # is noted for all QC standards in the sequence.

7.1.2. Our stock standard is approximately 20 ppm of Dimethyl Sulfide, Hydrogen Sulfide, and Methyl Mercaptan with a balance gas of Nitrogen.

8. PROCEDURE

8.1. Sample Preparation

8.1.1. Upon receipt, samples are assigned a unique laboratory ID number and stored either on the canister storage racks or in the bag storage area.

8.1.2. The Canister initial pressure is measured using the certified digital pressure gauge and then recorded on the canister tag, in the shipping and receiving logbook, and in the canister pressure log that goes with each project.

8.1.3. The Canister is then pressurized with UHP Helium using the certified digital pressure gauge to 900mmHgA and the final pressure is recorded on the canister tag, in the shipping and receiving logbook, and in the canister pressure log that goes with each project.

8.2. Sample Analysis

8.2.1. Check that all of the GC operating conditions are properly set and that the sample injection loop is in the load position.

8.2.2. For Ambient (Trace level) analysis

8.2.2.1. For Canister samples

8.2.2.1.1. Purge the syringe with ~50 to 100 mL of sample.

8.2.2.1.2. Inject at least 20 mL (preferably 50-100 mL) of sample slowly through the sampling loop using a 1/8" Teflon line.

8.2.2.1.3. A gastight syringe is used to make any necessary dilutions.

8.2.2.2. For Tedlar Bag samples

8.2.2.2.1. Purge the syringe with ~50 to 100 mL of sample.

8.2.2.2.2. Withdraw ~50 to 100 mL of sample from the Tedlar bag using a gastight syringe.

8.2.2.2.3. Inject at least 20 mL (preferably 50-100 mL) of sample slowly through the sampling loop using a gastight syringe.

8.2.2.3. Allow the sample to equilibrate to atmospheric pressure and press the start button on the GC.

8.2.2.4. All samples should be analyzed in duplicate.

8.2.3. For all non-ambient high sulfur concentration samples including natural gas, refinery fuel gas, landfill gas, and digester gas, dilute the samples 5 to 100 times with UHP Helium before analyzing to prevent overloading the detector. Look up historical reports to determine what dilution levels to start with. Follow the same analysis procedures outlined in section 8.2.2 for ambient samples.

8.3. Standard Preparation and generation of calibration curve

8.3.1. The method recommends preparing a curve with at least three points but typically the curve includes the following points: 0, 10, 50, 500, and 2500 ppbv.

8.3.2. The lower calibration points are prepared by first diluting the 20 ppmv stock standards from section 7.1.2 using UHP Helium in a Silonite Canister or Tedlar Bag. The 10 and 50 ppbv calibration points are prepared by diluting the prepared ppbv standard with UHP Helium in a gastight glass syringe.

8.3.3. Each calibration point is analyzed in triplicate and the peak areas should be within 5% of their average. The average area for each point is used to produce a linear regression curve forced through zero.

8.3.4. All mercaptan compounds are quantified with the MeSH response factor while all sulfide and disulfide compounds are quantified using the DMS response factor. All other compounds are quantified with the H2S response factor. Identification is based on comparing retention times of authentic standards to those in the samples.

8.4. GC Preparation

8.4.1. GC 6890N with Agilent 355 SCD – "ASTM5504.M" Run Method

GC 6890N Instrument Control Parameters

Injection Source and Location	Injection Source = Manual Injection Location = Back
Oven	Initial Temperature = 40°C Initial Time = 12 min Rate 1 = 10°C/min to 180°C Final Temperature = 180°C Final Temperature Hold = 5 min Total GC Run Time = 31 min Maximum Temperature = 250ºC Equilibration Time = 0.50 min
Inlet (Back)	Initial Temperature = 200ºC (On) Carrier Gas Pressure = 41.27 psi (On) Gas Type = Helium Inlet Split Ratio = 6.0:1
Column	Model Number = Agilent G3903-63001 Max Temperature = 250oC Nominal Length = 60 m Nominal Diameter = 0.320 mm Mode = constant flow Initial Flow = 7.5 mL/min Outlet Pressure = Ambient
Detector (Back)	Temperature = 200ºC (On)
Signal 2	Data Rate = 50 Hz Save Data = On Zero = 0.0 (Off) Range = 0
Agilent 355 SCD	Hydrogen Pressure = 80 psi Oxygen Pressure = 12 psi He Makeup Pressure = 0 psi Ozone Pressure = ~6.0 psi Furnace Temperature = 900o

8.4.2. Agilent GC 7890B with Agilent 8355 SCD - "SCD_Only.M" Run Method

Agilent GC 7890B Instrument Control Parameters

Injection Source and Location	Injection Source = Manual Injection Location = Back
GC Summary	Run Time = 31 min Post Run Time = 0 min
Oven	Equilibration Time= 0 min Max Temp = 260ºC Setpoint (Initial) = 40ºC Hold Time = 12 min Rate #1 = 10 ºC/min Final Temp = 180ºC Final time = 5 min
Front Inlet	Mode = Split Heater = 200ºC (On) Pressure = 39.664 psi (On) Total Flow = 47.915 mL/min (On) Septum Purge Flow = 3 mL/min (On) Gas Saver = Off Split Ratio = 5:1
Column	Model Number = Agilent G3903-63001 In = front inlet Out = Back Detector SCD Max Temperature = 250oC Nominal Length = 60 m Nominal Diameter = 0.320 mm Mode = constant flow Initial Flow = 7.4859 mL/min Average Velocity = 68.396 cm/sec Holdup Time = 1.4621 min Post Run Flow = 7.5 mL/min Outlet Pressure = Ambient
Back Detector SCD	Oxidizer Gas = Air Base Temperature = 250ºC (On) Burner Temperature = 800 C (On) Upper H2 Flow = 30 mL/min Lower H2 Flow = 8 mL/min Oxidizer Flow = 55 mL/min O3 Generator Flow = On O3 Generator Power = On

	Vacuum Pump = On Nominal Burner Pressure = 413.1 Torr
Thermal Aux 1	Temperature = 100ºC

8.5. Analysis Sequence

8.5.1. System Blank – For the first injection of the day on the instrument, and any time that sample carryover has occurred, the analyst must demonstrate, through the analysis of a system blank that there are no interferences from the analytical system. The system blank used in this method is UHP Helium.

8.5.2. Calibration Standards – Each calibration standard must be analyzed in triplicate with a minimum of three calibration points that bracket the anticipated analyte concentrations when a new calibration is required.

8.5.3. Continuing Calibration Verification (CCV) – Before analyzing any samples and at the end of each sequence a CCV should be analyzed to verify that the instrument's calibration is still valid. The concentration of the standard used should be within the range of the samples and at least 10 times the detection limit. Generally, the CCV concentration is 500 ppbv. The opening CCV is analyzed in triplicate.

8.5.4. Method Blank (MB) – For each batch (up to 20 samples), a MB must be analyzed. This blank should go through all of the stages of sample preparation and measurements that the samples undergo. The MB used in this method is UHP Helium.

8.5.5. Matrix Spike (MS) and Matrix Spike Duplicate (MSD) – For each batch (up to 20 samples) an MS and MSD must be analyzed. The MS / MSD are prepared by the addition of a known amount of the standard to a sample extract. Generally, the MS and MSD concentrations are prepared with a 1:1 mixture of 500 ppbv H2S/MeSH/DMS standard and a known volume of sample gas.

8.5.6. Sample Analysis – Every sample should be analyzed in duplicate. When a concentration of a compound within the sample falls out of linear range for the calibration curve, dilutions of the sample are made and reanalyzed. Each sample is analyzed and the concentration calculated. If the concentration of a duplicate run is outside of the range of the ±10% from the initial sample, then the sample must be reanalyzed until that condition is met. Enter the sample dilution factor (DF_E) into the data processing software sequence.

9. QUALITY CONTROL

QC Performed	Frequency	Acceptance Criteria	Corrective Action
Calibration Curve	Recommended every month or whenever maintenance is performed	1 – Correlation Coefficient of a linear least-squares fit R2 $\geq$ 0.990 2 – Max range ≤ 5% for three consecutive trials 3 – Recovery of 100 $\pm$ 5% of theoretical value	1 - Rerun curve 2 - Prepare new standards and rerun curve
Continuing Calibration Verification (CCV)	After the curve; Before analyzing any samples; and At the end of each sequence	1 – Max range ≤ 5% for three consecutive trials 2 – Recovery of 100 $\pm$ 5% of theoretical value	1 – Rerun check 2 – Prepare new standard and rerun 3 – Rerun calibration
Matrix Spike and Matrix Spike Duplicate (MS / MSD)	For each batch – up to 20 samples	1 – Recovery of 100 $\pm$ 10% of theoretical value 2 – RPD < 10%	1 – Rerun check 2 – Prepare new standard and rerun 3 – Flag data
Field Sample Duplicates	Every sample should be analyzed in duplicate	Within 10% of initial analysis	1 – Rerun check 2 – Prepare new sample and rerun 3 – Flag data
Method Blank	For each batch – up to 20 samples	< RL	1 – Rerun check 2 – Prepare new blank and rerun 3 – Perform blank subtraction for all samples included in batch
System Blank	Before and after the curve; Before processing any samples	< RL	1 – Rerun check 2 – Prepare new blank and rerun

9.1. The QC criteria outlined here is above and beyond what the method requires but is adhered to in this lab as good laboratory practice.

9.2. It is the responsibility of the analyst to perform the analysis according to this SOP and complete the documentation required for review.

9.3. It is the responsibility of all personnel who work with samples involving this method to note any anomalies or out-of-control events associated with the analysis of the samples. Any discrepancies must be noted and corrective action taken and documented.

9.4. Document all maintenance procedures in the instrument logbook assigned to each instrument.

10. CALCULATIONS

10.1. The data processing software calculates a Response Factor from the curve generated in Section 8.3 for each analyte concentration as follows:

$$RF = \frac{P_{ST} - P_0}{C_{ST}}$$

where:

RF = Response factor for the analyte given as area counts per ppbv

P_{ST} = Peak area counts for the analyte standard

P_0 = Calibration curve intercept; in most cases this is zero

C_{ST} = Concentration of analyte in the calibration standard in units of ppbv

10.2. The data processing software calculates the analyte concentration in ppbv for each sample using the following equation:

$$C_{SAM} = \frac{P_{SAM} - P_0}{RF}$$

where :

C_{SAM} = Concentration of analyte in the sample in units of ppbv

P_{SAM} = Peak area counts for the analyte sample

10.3. For those samples that were diluted in Section 8.5.6 the data processing software calculates the analyte concentration using the following formula:

$$C_{SAM} = C_{SAM_{DIL}} * DF_E$$

where :

$C_{SAM_{DIL}}$ = Concentration of analyte in the diluted sample

DF_E = Sample dilution factor used in Section 8.5.6

10.4. The canister dilution factor is calculated using the following formula:

$$DF_C = \frac{P_F}{P_I}$$

where:

DF_C = Canister Dilution Factor

P_F = Pressure after canister has been pressurized using UHP He (should be ~900mmHg)

P_I = Return initial pressure upon receipt from the field.

10.5. Calculate the CCV recoveries as follows:

$$\%\mathrm{Rec}_{\mathrm{CCV}} = \left(\frac{C_{CCV}}{C_{TC}} \right) * 100$$

where:

C_{CCV} = Measured concentration of the CCV

C_{TC} = Theoretical concentration of the CCV

10.6. Calculate the Matrix Spike recoveries as follows:

$$\%\mathrm{Rec}_{MS} = \left(\frac{C_{MS}}{C_{SAM} + C_{spike}} \right) * 100$$

where:

C_{MS} = Measured concentration of the Matrix Spike in units of ppbv

10.7. Calculate the Relative Percent Difference (RPD) for the Matrix spike samples using the following formula:

$$RPD_{MS} = ABS\left[\frac{C_{MSdup} - C_{MS}}{Average(C_{MSdup}, C_{MS})} \right] * 100$$

where:

C_{MSdup} = Measured concentration of the Matrix Spike duplicate in units of ppbv

ABS = Absolute Value

10.8. Calculate the Relative Percent Difference (RPD) for the duplicate samples using the following formula:

$$RPD_{SAM} = ABS\left[\frac{C_{DUP} - C_{SAM}}{Average(C_{SAM}, C_{DUP})} \right] * 100$$

where:

C_{DUP} = Duplicate sample concentration in units of ppbv

11. REPORTING FORMAT

11.1. The samples are reported as the total quantity of analyte (ppbv) in the sample.

11.2. Any samples with analyte values below the Sample Reporting Limit are reported as <SRL for the specific analyte. If other analytes are present, they are reported as stated in section 11.1.

12. REFERENCES

12.1. ASTM D-5504-20 “Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence”

12.2. SOP LAB.104, Procedure for Determination and Verification of the Limit of Detection and Limit of Quantitation. Atmospheric Analysis and Consulting Inc. 2020.

12.3. SOP LAB.101, Cleaning and Certification of Summa Cannister. Atmospheric Analysis and Consulting Inc. 2020.

13. FIGURES

FIGURE 1 – TYPICAL ASTM D-5504 CCV CHROMATOGRAM

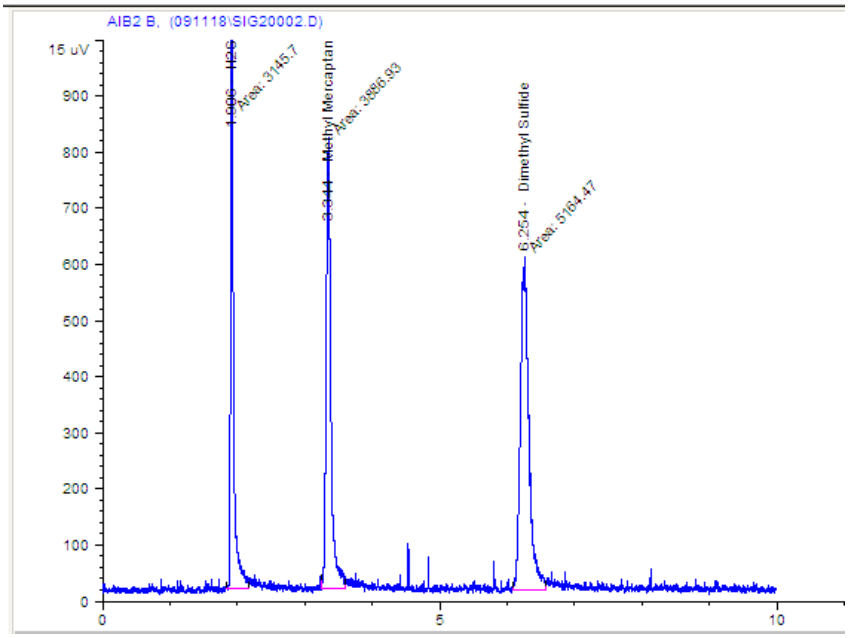
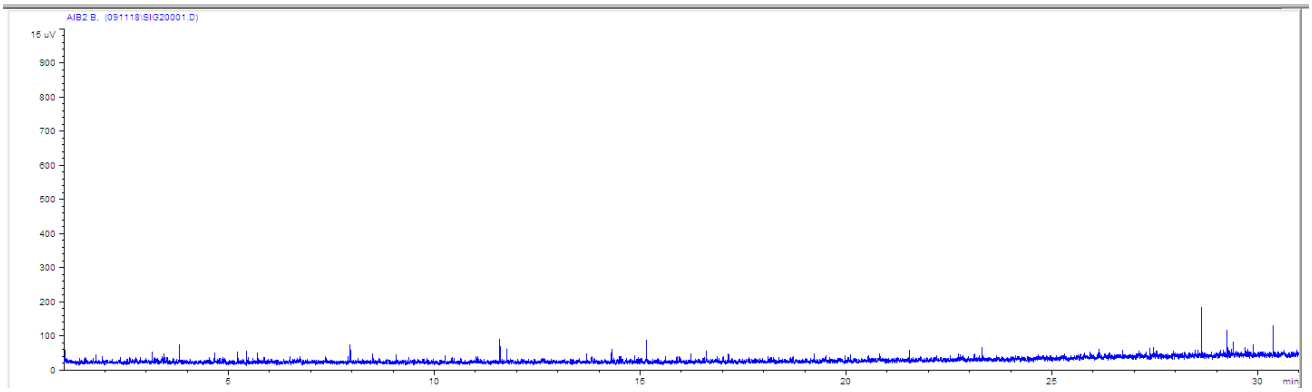


FIGURE 2 – TYPICAL ASTM D-5504 BLANK CHROMATOGRAM



14. GLOSSARY

°C	Degree Celsius
cm/sec	Centimeters per second
ID	Identification
L	Liter
LOD	Limit of Detection
m	Meter
MDL	Method Detection Limit
min	Minute
mL	Milliliter
mm	Millimeter
mm ID	Millimeter inner diameter
mmHgA	Millimeter Mercury Absolute
Neat	Not diluted or mixed with other substances
PPE	Personal Protective Equipment
ppm	Parts per Million
PQL	Practical Quantitation Limit
PQL	Practical Quantitation Limit
psi	Pounds per Square Inch
RL	Reporting Limit
SCD	Sulfur Chemiluminescence Detector
SDS	Safety Data Sheets